CITY OF SCARBOROUGH / MINISTRY OF TRANSPORTATION

MILNER AVENUE CORRIDOR AND MALVERN GATEWAY

TRANSPORTATION STUDY

McCORMICK RANKIN

MAY 1990

MILNER AVENUE CORRIDOR AND MALVERN GATEWAY TRANSPORTATION STUDY

FINAL REPORT

MAY 1990

PREPARED FOR:
CITY OF SCARBOROUGH
MINISTRY OF TRANSPORTATION
BY:
McCORMICK RANKIN
CONSULTING ENGINEERS

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1. EXECUTIVE SUMMARY

The Milner Avenue Corridor and Malvern Gateway Transportation Study commenced in February 1989 and was carried out by the City of Scarborough in conjunction with the Ministry of Transportation. The purpose of the study was two-fold:

- To determine the transportation opportunities within the study area in order to provide the City of Scarborough with an understanding of the transportation requirements as they proceed to address the future development of the area.
- To carry out an overview of the possible gateway sites in the vicinity of the study area and to identify and address the specific issues regarding the proposed Malvern Gateway.

The study area included the area bounded by McCowan Road, Sheppard Avenue, Morningside Avenue and Ellesmere Road.

The study was carried out by a Consultant Study Team under the direction of a Technical Advisory Committee. The Project Team provided overall guidance and direction. The Project Team and Technical Advisory Committee were comprised of staff representatives of the City of Scarborough, the Ministry of Transportation, Metropolitan Toronto, the Toronto Transit Commission and GO Transit.

An extensive public participation program was carried out during the course of the study. Three series of public information centres were held:

- March/April 1989
  To introduce the study and receive public comments.

- June 1989
  To review interim improvements, future overall levels of development, the 'gateway' components and possible additions to the transportation network.

- December 1989
  To review the study conclusions, including the possible additions to the transportation network and the status of the Malvern Gateway.

During the course of the study, the following was assessed:

(i) the operation of the existing transportation network including the operation of the signalized intersections;

(ii) the long range capability of the transportation network to accommodate the increased traffic and transit requirements associated with additional development; and

(iii) the interrelationship of the three gateway locations in the vicinity of the study area.

(iv) the issues regarding the Malvern Gateway.

In summary, the travel demand analysis of the transportation network has concluded that the existing network, with localized improvements, could accommodate the "permitted" level of development. The "permitted" level of development was defined as an employment level of 75,000. This represents the target employment level of 40,000 for the City Centre and an employment level of 35,000 for the industrially designated areas within the study area. The latter represents the employment level associated with the full development for the study area to the industrial designation as per the Official Plan as well as any approved development to December 1989. (See Section 3.3 Future Land Use Considerations).

The range of localized improvements includes intersection improvements, particularly at the three critical intersections, namely: Milner Avenue/McCown Road, Milner Avenue/Markham Road and Progress Avenue/Markham Road.

The travel demand analysis has shown that if the City of Scarborough decides to permit levels of development to higher order and higher density uses than generally identified in the Official Plan, then additions to the transportation network will have to be implemented. A number of additions to the transportation network were developed, analyzed and reviewed. The development opportunities which could be accommodated by each of the transportation facilities were also addressed.

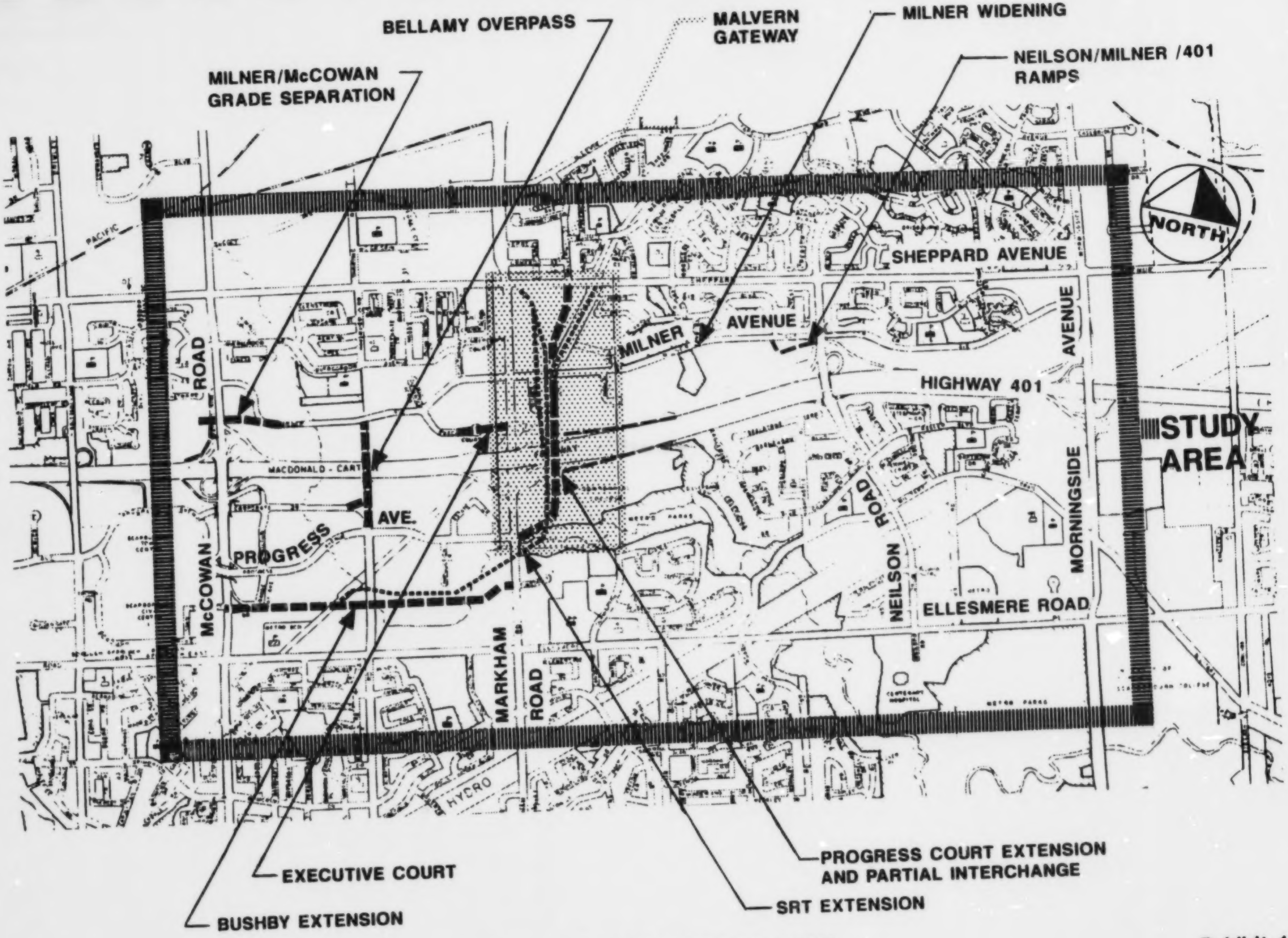
Based on a review of the assessment and the public comments, the Technical Advisory Committee has recommended that the following additions to the roadway network be protected for:

- Executive Court Extension
- Progress Court Extension and Partial Interchange
- Milner/McCowan Grade Separation
- Bellamy Road Overpass
- Bushby Drive Extension
- Widening of Milner Avenue
- Neilson/Milner/401 Ramps

In addition, it is realized that the opportunity to develop the Malvern Gateway is an important consideration.

To become a fully functioning gateway, however, the Malvern Gateway requires the SRT Extension to be in place although some interim development may be viable. The resulting benefits of greater transit usage and less car usage would be maximized with the earliest possible implementation of the SRT. To this end, greater densities of development would give greater support to the implementation of the SRT Extension, which is in fact required in order to pursue the development of the Malvern Gateway.

The additions to the roadway network, the SRT Extension and the Malvern Gateway together create an ultimate transportation system which is shown in Exhibit 1. The travel demand analysis has demonstrated that this system would be able to handle well beyond the "permitted" level of development level. The early implementation of the SRT Extension will enable better integration with land use and the higher densities of development required to support it as well as provide the opportunity to develop the Malvern Gateway.



ULTIMATE TRANSPORTATION SYSTEM

Exhibit 1

2. INTRODUCTION

In 1988, the City of Scarborough identified the need to give special attention to planning within the Milner Avenue Corridor, recognizing that the area is experiencing pressures for change from the existing industrial development to higher order uses such as commercial, office and residential. The Milner Avenue Corridor includes the Malvern, Neilson and Progress (east section) Industrial Districts. The City determined that a strategic planning study, to address the transportation requirements of potential levels of development and the possible community effects, should be undertaken to provide the context for the consideration of future development.

Meanwhile, in May 1988, the Ministry of Transportation announced its support for the development of a series of "gateways" across the Greater Metropolitan Toronto Area. A "gateway" is a focal point in the transportation network providing a multi modal transfer facility for pedestrians, private automobiles, surface and rapid transit vehicles. The announcement included the identification of an existing gateway at the Scarborough City Centre and the potential development of a future gateway at the proposed terminal of the extension of the Scarborough Rapid Transit (SRT), namely the Malvern Gateway (in the vicinity of Highway 401 and Markham Road), which is in the Milner Avenue Corridor.

Through discussion between representatives of the City of Scarborough and the Ministry of Transportation, it was agreed to combine the objectives of both agencies into one study. The Milner Avenue Corridor and Malvern Gateway Transportation Study therefore commenced in February, 1989.

2.1 STUDY PURPOSE

The Terms of Reference identified the prime objectives of the study as:

(i) Prepare a comprehensive evaluation of the transportation infrastructure required to accommodate various development/redevelopment levels in the study area;

(ii) Identify environmental and community impacts for each of the development/redevelopment levels and required transportation improvements and recommend methods of mitigating those factors which may be of concern;

(iii) Make specific recommendations for the preferred location(s) and operational requirements of the Malvern Transportation Gateway;

(iv) Make specific recommendations on the need for and timing of required surface bus and rapid transit improvements in the study area;

(v) Estimate the economic costs and benefits associated with each development level and transportation option. Specifically to estimate changes to assessment revenues, land acquisition costs and the capital cost of transportation improvements.

Being a strategic planning study, however, the objectives evolved as the study progressed. Since the possible future land use scenarios are numerous, it became clear that the focus should be on the transportation capabilities of the study area. The objective was to determine what constraints, if any, exist and the opportunities provided by possible reasonable solutions. Therefore, the purpose of the study was not to determine the nature of future land use but to determine the transportation opportunities/constraints of the study area in order that this information could be input into future decisions regarding land use.

Therefore, during the earlier part of the study, the purpose was identified as:

- To determine the transportation opportunities within the study area in order to provide the City of Scarborough with an understanding of the transportation requirements as they proceed to address the future development of the area.
- To carry out an overview of the possible gateway sites in the vicinity of the study area and to identify and address the specific issues regarding the proposed Malvern Gateway.

More specifically, the purpose of the study included the following:

- To assess the transportation impacts of approved and proposed development in the Milner Avenue corridor.
- To identify a range of potential future development and redevelopment levels.
- To identify the associated transportation improvements which would be required.
- To carry out a gateway overview and then assess the Malvern Gateway in more detail.
- To determine the effects on the community and the natural environment of transportation improvements.
- To provide information to Council and the public with respect of the pros and cons in terms of the community, the natural environment, transportation and economic effects of various development/transportation alternatives.

2.2 STUDY AREA

The overall study area includes the area bounded by McCowan Road, Sheppard Avenue, Morningside Avenue and Ellesmere Road. The relationship of the study area to the City of Scarborough is shown in Exhibit 2, while Exhibit 3 shows the study area in greater detail.

The study area includes:

- The industrial areas which are experiencing change and are the subject of potential changes in development:
  - the Malvern Industrial District
  - the Neilson Industrial District
  - the Progress Industrial District (eastern section)

- Adjacent residential areas:
  - Malvern West Community
  - Malvern Community
  - Morningside Community
  - Woburn Community

- The area defined as the Malvern Gateway.

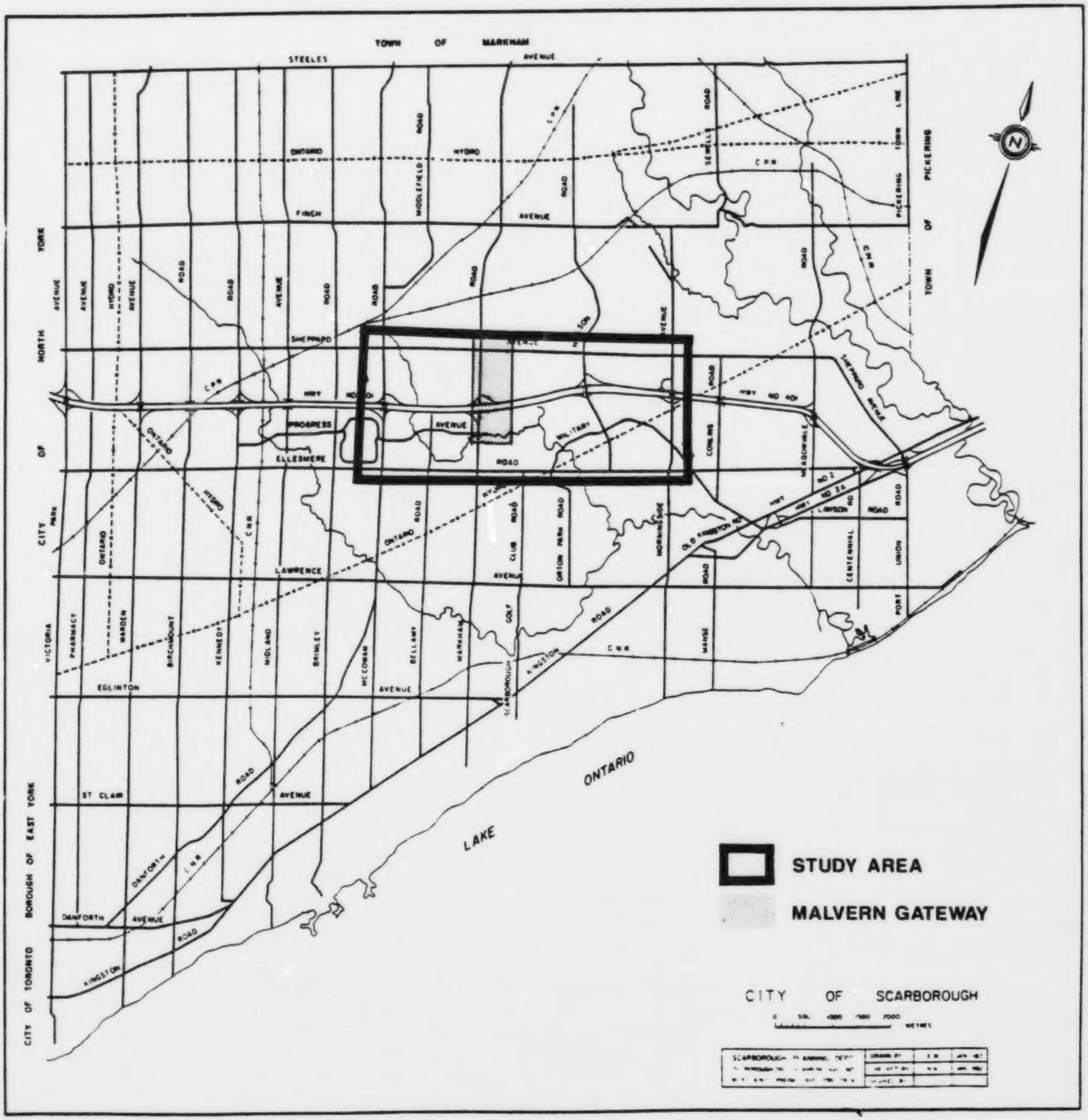
The Scarborough City Centre was not included in the defined study area for the following reasons:

- it has been the subject of previous detailed studies as well as an ongoing monitoring report which is updated annually.

- it could result in the loss of "focus" on the study area.

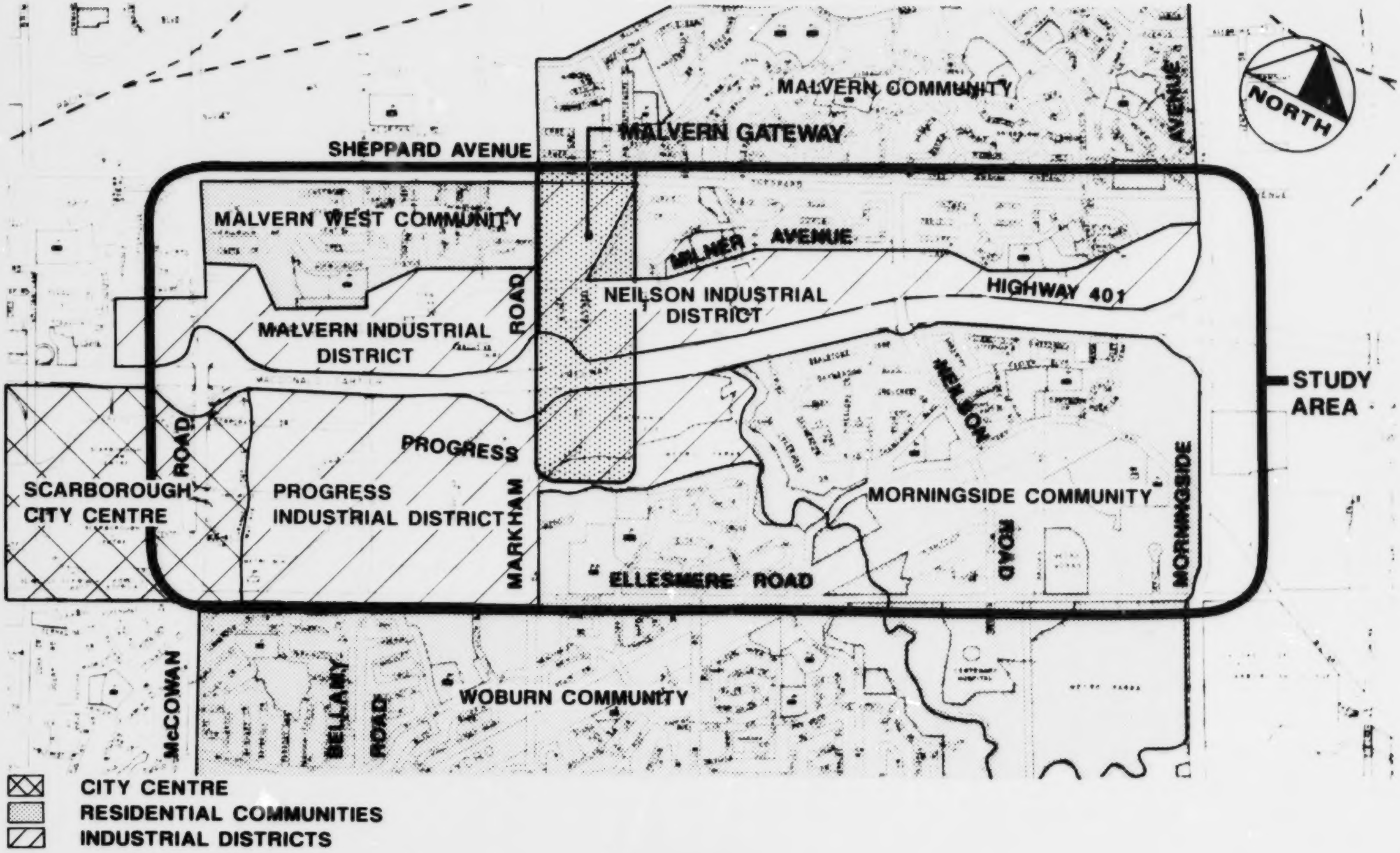
It was, however, included in the modelling analysis in terms of its ultimate development level.

For the gateway overview, a larger area was considered which included the study area.



RELATIONSHIP OF STUDY AREA TO CITY OF SCARBOROUGH

Exhibit 2



STUDY AREA

Exhibit 3

2.3 STUDY ORGANIZATION

The study organization chart developed at the outset of the study is shown in Exhibit 4.

The funding agencies for this study were the City of Scarborough and the Ministry of Transportation.

2.3.1 Project Team (Steering Committee)

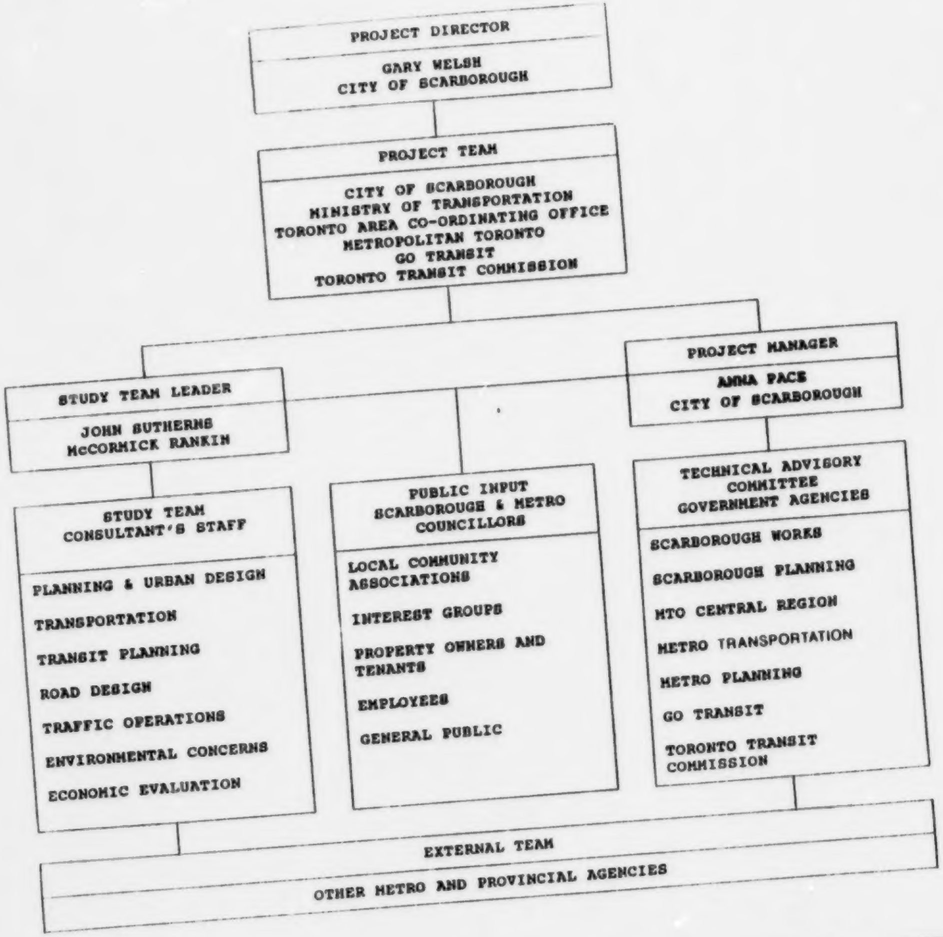
Study direction was provided by the Project Team which consisted of senior representatives from the City of Scarborough, the Ministry of Transportation, Metropolitan Toronto, the Toronto Transit Commission and GO Transit. Members of the Project Team were:

Mr. G. Welsh (Project Director)	Director of Transportation and Planning Works Department City of Scarborough
Mr. E. Watkins	Principal Planner - Transportation Planning Department City of Scarborough
Mr. B. Ogden	Ministry of Transportation Toronto Area Coordinating Office
Mr. R. Gordon	Director, Transportation Division Metropolitan Toronto Planning Department
Mr. B. Zvaniga	Acting Manager Traffic Planning Metropolitan Toronto Transportation Department
Mr. N. Melnyck	Manager Corporate Planning Toronto Transit Commission
Mr. F. Goh	Senior Project Development Officer Project Development GO Transit

MILNER AVENUE CORRIDOR/MALVERN GATEWAY TRANSPORTATION STUDY

Ministry of Transportation
Ontario

CITY OF SCARBOROUGH



PROJECT DIRECTOR
GARY WELSH
CITY OF SCARBOROUGH

PROJECT TEAM
CITY OF SCARBOROUGH
MINISTRY OF TRANSPORTATION
TORONTO AREA CO-ORDINATING OFFICE
METROPOLITAN TORONTO
GO TRANSIT
TORONTO TRANSIT COMMISSION

STUDY TEAM LEADER
JOHN SUTHERNS
McCORMICK RANKIN

PROJECT MANAGER
ANNA PACE
CITY OF SCARBOROUGH

STUDY TEAM
CONSULTANT'S STAFF
- PLANNING & URBAN DESIGN
- TRANSPORTATION
- TRANSIT PLANNING
- ROAD DESIGN
- TRAFFIC OPERATIONS
- ENVIRONMENTAL CONCERNS
- ECONOMIC EVALUATION

PUBLIC INPUT
SCARBOROUGH & METRO
COUNCILLORS
- LOCAL COMMUNITY ASSOCIATIONS
- INTEREST GROUPS
- PROPERTY OWNERS AND TENANTS
- EMPLOYEES
- GENERAL PUBLIC

TECHNICAL ADVISORY
COMMITTEE
GOVERNMENT AGENCIES
- SCARBOROUGH WORKS
- SCARBOROUGH PLANNING
- MTO CENTRAL REGION
- METRO TRANSPORTATION
- METRO PLANNING
- GO TRANSIT
- TORONTO TRANSIT COMMISSION

EXTERNAL TEAM
OTHER METRO AND PROVINCIAL AGENCIES

STUDY ORGANIZATION

Exhibit 4

The Project Team reviewed the key outputs of the Technical Advisory Committee, and provided direction and approval. Members of the team were kept informed of the study progress and findings throughout the study by the associated representative(s) on the Technical Advisory Committee. In addition, two meetings were held on:

DATE	PURPOSE
November 4, 1989	To review the study's conclusions and preliminary recommendations and the information to be reviewed with the public in December, 1989.
January 24, 1990	To review the issues regarding the Malvern Gateway/SRT Extension/development applications and the future course of action.

The Project Director was Mr. Gary Welsh, P. Eng., Director of Transportation and Planning for the City of Scarborough Works Department.

2.3.2 Technical Advisory Committee

The Technical Advisory Committee (TAC) included staff members from each of the specified authorities and agencies involved. The purpose of the TAC was to provide ongoing direction and technical input to the Consultant Study Team and to keep the Project Team informed of the study progress and findings. Members of the TAC included:

Mr. G. Welsh (Project Director)	City of Scarborough Works Department
Mr. R. McLean (Project Manager to December 1, 1989)	Formerly with the City of Scarborough Works Department

Ms. A. Pace (Project Manager after December 1, 1989)	City of Scarborough Planning Department
Mr. B. Ogden	Ministry of Transportation Toronto Area Coordinating Office
Mr. B. Zvaniga	Metropolitan Toronto Transportation Department
Mr. T. Laspa	Metropolitan Toronto Transportation Department
Mr. R. Pringle	Metropolitan Toronto Planning Department
Mr. M. Wehkind	Metropolitan Toronto Planning Department
Mr. R. Hughes	Toronto Transit Commission Corporate Planning
Mr. F. Goh	GO Transit Project Development
Mr. S. Bruno	GO Transit Project Development

Meetings were held as follows:

DATE	PURPOSE
February 19, 1989	To initiate the study; to discuss the collection of background data and the first public review.
April 28, 1989	To review the results of the first public review and the future course of action.
May 19, 1989	To review the initial model runs.

June 1, 1989	To review the additional model runs and the proposed display panels.
July 14, 1989	To review the results of the second public review and the future course of action.
August 3, 1989	To review the issues regarding the Malvern Gateway.
August 31, 1989	To review the preliminary development of the matrix, marketing analysis and preliminary layouts of the terminal station.
October 2, 1989	To review the marketing analysis and intersection analysis
November 3, 1989	To review the preliminary study conclusions.
November 27, 1989	To review the information to be reviewed with the public.
December 20, 1989	To review the results of the third public review and the future course of action.
February 19, 1990	To review the draft report.
March 9, 1990	To review the final draft report.

2.3.3 Consultant Study Team

On February 13, 1989, Scarborough Council approved the recommendation to retain McCormick Rankin Consulting Engineers to carry out the study.

2.3.4 External Agencies

Representatives of a number of provincial and municipal agencies were invited to meetings during the course of the study in order that they could be informed of the study findings and requested to provide input. Those agencies invited to the meetings are listed in Appendix A. Meetings were held on:

DATE	PURPOSE
Wednesday, March 29, 1989	To introduce the study.
Tuesday, June 20, 1989	To review interim improvements, future overall levels of development, the 'gateway' components and possible additions to the transportation network.
Monday, December 4, 1989	To review the study conclusions and preliminary recommendations.

Minutes of the meetings are included in Appendix A.

2.3.5 Scarborough Council

The study area falls within four wards for the City of Scarborough:

Area	Councillor
Ward 5	Marilyn Mushinski

Ward 8	Shirley Eidt
Ward 13	Bas Balkissoon
Ward 14	Edith Montgomery

The City Councillors were kept informed of the study through ongoing contact with Scarborough staff. In addition, prior to each series of public information centres, the material to be reviewed with the public was discussed with the affected Councillors and their comments were sought.

The study area is also represented by the following Metropolitan Councillors:

Area	Councillor
Scarborough Malvern	Bob Sanders
Scarborough City Centre	Brian Harrison
Scarborough Highland Creek	Ken Morrish

These Councillors were advised of the study by the Metropolitan representatives on the Technical Advisory Committee and received notices of the public information centres.

2.3.6 Public Review

The study was organized to enable public involvement throughout the study and to be flexible in order to meet the community's needs. As a result, an extensive public participation program was undertaken as an integral part of this study. It is discussed in detail in Chapter 6 - Public Participation and summarized here.

Three series of public review were held, with four information centres scheduled during each review (one located within each ward). The information centres were advertised by:

- first class mailing of +11,000 notices to assessed property owners and tenants within the study area.

- first class mailing to all community associations and interest groups within the City of Scarborough.

- placement of advertisements in the Scarborough Mirror, Scarborough News and Toronto Star (Neighbours East Section).

- release of a public service announcement.

- distribution of notices to community facilities.

The following public information centres were held:

FIRST SERIES

- March/April 1989
- To introduce the study and receive public comments

Wednesday, March 29, 1989	3:00 to 9:00 p.m. Rotunda, Scarborough Civic Centre 150 Borough Drive
Thursday, March 30, 1989	7:00 to 9:00 p.m. Burrows Hall Junior School 151 Burrows Hall Boulevard
Tuesday, April 4, 1989	7:00 to 9:00 p.m. George B. Little Junior School 125 Orton Park Road
Wednesday, April 5, 1989	7:00 to 9:00 p.m. C.D. Farquharson Junior School 1965 Brimley Road

SECOND SERIES

- June 1989
- To review interim improvements, future overall levels of development, the 'gateway' components and possible additions to the transportation network.

Tuesday, June 20, 1989	3:00 to 9:00 p.m. Rotunda, Scarborough Civic Centre 150 Borough Drive
Wednesday, June 21, 1989	7:00 to 9:00 p.m. Military Trail Public School 701 Military Trail
Thursday, June 22, 1989	7:00 to 9:00 p.m. Burrows Hall Public School 151 Burrows Hall Boulevard
Tuesday, June 27, 1989	7:00 to 9:00 p.m. White Haven Public School 105 Invergordon Avenue

THIRD SERIES

- December, 1989
- To review the study conclusions, including the possible additions to the transportation network and the status of the Malvern Gateway.

Monday, December 4, 1989	3:00 to 9:00 p.m. Rotunda, Scarborough Civic Centre 150 Borough Drive
Tuesday, December 5, 1989	7:00 p.m. 9:00 p.m. Military Trail Public School 701 Military Trail
Thursday, December 7, 1989	7:00 to 9:00 p.m. Burrows Hall Public School 151 Burrows Hall Boulevard
Monday, December 11, 1989	7:00 to 9:00 p.m. White Haven Public School 105 Invergordon Avenue

Attendance at the information centres was as follows:

	Estimated Attendance
March/April, 1989	200
June, 1989	100
December, 1989	80

In addition, meetings were held with smaller groups, at their request. For the most part, requests were made by property owners and developers within the study area. Following the December 1989 public review, two of the Scarborough Councillors requested additional meetings for members of their wards. These meetings were held in February, 1990.

The results of the public review are discussed in detail in Chapter 6 - Public Participation.

2.4 STUDY APPROACH

Following Scarborough Council's authorization to retain McCormick Rankin to carry out the study, a study design was developed which is included in Appendix A. The overall study approach and specific activities outlined in the study design reflect the original terms of reference, and the following considerations which were based on (i) comments provided by Committees of Council, and (ii) discussions with both funding agencies involved in the study:

- Increasing development and the associated increases in traffic and transit ridership are placing ever increasing demands on the transportation system serving the Scarborough City Centre.

  At the same time, the interest in the redevelopment of industrial lands to the east of the City Centre is increasing dramatically. Continued interest in development could result in transportation problems unless it occurs in concert with improvements to the existing system. Conversely, if the transportation problems are not capable of resolution by means of reasonable improvements to the transportation system, then this information should be available to the decision-makers.

- The City needs to be able to respond to development proposals in the short, medium and long term contexts in so far as being able to identify required system improvements and costs for various levels of development. This will require the study to provide specific recommendations for consideration by the City.

- The gateway component of the project will require the investigation of options for bringing together various transportation modes in the Markham Road/Highway 401/Milner Avenue area. This focus of activities will result in transportation demands and potential development pressures that will be virtually inseparable from the overall development pressure within the area.

  During the course of the study it will be necessary to ensure that both the opportunities and the costs associated with the Malvern Gateway are properly identified and understood by the study participants and the decision-makers.

- Transportation studies traditionally project traffic/transit demands for specific horizon years. This may be a reasonable approach on a macro or Metro wide scale in order to determine background traffic demands. However, it will be impossible to identify specific years in which a particular level of development will or will not occur in identified blocks within the study area. Consequently, the study will address development and transportation requirements on a short, medium or long term basis rather than relate to specific years.

- Transportation decisions that fall under provincial jurisdiction will potentially have effects on the transportation demands and requirements within the study area. As decisions related to these facilities are not under the control of the City of Scarborough, it will be necessary to carry out a number of sensitivity analyses to determine the effects of the implementation of any of these facilities.

- In order to ensure a thorough understanding and proper involvement in the study of all potentially interested technical agencies, elected representatives and public groups/individuals, it was proposed that an extensive review of the study data be provided at three key points during the study:

  (i) Early in the study to advise all interested parties that the study is underway; to indicate the manner in which it is proposed to carry it out and to invite public input in terms of information and suggestions.

  (ii) At the point where all relevant background data has been gathered and analyzed, problems identified and possible interim solutions identified.

  (iii) At the point where specific recommendations for both the interim and long term have been developed.

2.5 STUDY ACTIVITIES/STAGES

Since this study was carried out at a strategic level of planning, certain study activities evolved as the study was underway. In addition, since a full range of aspects of the study area was considered, many of the study activities overlapped and were carried out at the same time.

The study activities were organized in the following areas:

- collection of background information
- assessment of existing and future development
- analysis of intersection improvements
- analysis of existing transportation network and possible additions to it
- overview of gateway sites
- assessment of the Malvern Gateway

2.5.1 Collection Of Background Information

This involved collecting background data regarding the road and transit network, existing land use and possible options for future land use. Information was obtained from:

- the City of Scarborough
- Metropolitan Toronto
- Toronto Transit Commission
- GO Transit
- Ministry of Transportation

2.5.2 Assessment of Existing and Future Development

In order to develop a range of reasonable additions to the transportation network and to assess both the existing transportation network and modified network, levels of development had to be identified as well as the related trip generation. An extensive travel demand analysis was carried out which included a major computer modelling exercise.

2.5.3 Intersection Improvements

An analysis of all signalized intersections within the study area was carried out to assess existing operations. Possible improvements were identified to address deficiencies and the potential for increased capacity.

2.5.4 Additions to the Transportation Network

A full range of additions to the road and transit network were identified and assessed.

At a broad level, the objective was to assess the transportation effects of a range of potential future redevelopment/development levels and to specify possible improvements to the transportation network required to accommodate the development levels. Following that, each addition to the transportation network was assessed on its own.

2.5.5 Gateway Overview

In May 1988, the Ministry of Transportation announced its support for a series of "gateways" across the Greater Toronto Area. A "gateway" is a focal point in the transportation network providing a multi-modal tansfer facility for pedestrians, private automobiles, surface and rapid transit vehicles, while at the same time providing services which address the needs of commuters. To maximize the benefits provided by a "gateway", transportation and land use should be well-integrated.

At the outset, a strategic overview of the three existing or potential Scarborough gateway locations specifically, Scarborough City Centre and Malvern (both of which were identified by the Ministry of Transportation) and the area in the vicinity of the Agincourt GO station at Kennedy/Sheppard was undertaken. These gateway locations were identified due to their existing (or potential) strategic location in north-eastern Metropolitan Toronto and because of their possible effects on the study area. The purpose of the overview was to address their functions (existing and proposed) and their interrelationship.

2.5.6 Malvern Gateway

The proposed Malvern Gateway was then assessed in more detail in terms of:

- SRT Extension - alternative alignments, possible station locations, storage/maintenance yard location

- range of components (e.g. parking, kiss 'n ride etc.) and possible locations

- issues/future course of action regarding provincial and municipal policy decisions and discussions/negotiations with property owners within the SRT Extension corridor.

3. BACKGROUND DATA

3.1 TRANSPORTATION DATA

3.1.1 Road Network

The study area is served by the following:

Provincial Freeway

- Highway 401
  - core/collector system west of Neilson Road
  - interchanges with McCowan Road, Markham Road, Neilson Road and Morningside Avenue

Metro Arterial Roadways

• north - south:	McCowan Road -	6 lane urban arterial
	Markham Road -	6 lane urban arterial
	Morningside Avenue -	4 lane urban arterial
• east - west:	Sheppard Avenue -	6 lane urban arterial
	Ellesmere Road -	4 lane urban arterial

Scarborough Roadways

• north - south:	Neilson Road -	4 lane urban arterial
	Bellamy Road (terminates at Progress Avenue) -	2 lane urban arterial
• east - west:	Milner Avenue -	2 lane industrial collector
	Progress Avenue -	2 lane industrial collector
	Military Trail -	2 lane residential collector

- other collectors and local roads

Within the existing roadway network, it should be noted that the main north-south and east-west roadways (e.g. Highway 401, McCowan Road, Markham Road, Sheppard Avenue and Ellesmere Road) are under the jurisdiction of either the Province or Metropolitan Toronto. Therefore, the roads serve a regional function with their primary purpose being to carry "through" traffic. As a result, they do not specifically serve the study area by providing local access, although they are used this purpose.

3.1.2 Scarborough Rapid Transit (SRT)

On June 28, 1977 Metropolitan Council approved the construction of the SRT from the Kennedy subway station to the Scarborough City Centre which subsequently opened in 1985. The SRT runs between the Bloor/Danforth subway and the Scarborough City Centre. North of Ellesmere Road there are stations at Ellesmere, Midland, City Centre and the terminus station at McCowan. The SRT currently consists of 4-car trains which run every four minutes (in the peak period) thereby providing a capacity of 4,200 passengers per hour in each direction. In the off peak period the trains run every six minutes.

During the feasibility studies for the SRT, alternative options for a possible extension were considered. The extension to the Malvern Community via the Hydro corridor was determined to be preferred and subsequently was identified in the Malvern Secondary Plan, the Metroplan and the Scarborough Official Plan. In 1986 the report "Malvern Transportation Corridor - A Review of Options" re-examined the need to protect all or part of the Hydro corridor. It concluded that the corridor should be protected to Sheppard Avenue but that the predicted ridership would not warrant the extension of the SRT north of Sheppard Avenue within the Hydro right-of-way.

The alignment of the SRT Extension from McCowan Road to Sheppard Avenue was developed at a planning level of detail by the Toronto Transit Commission in 1982/83. In a report dated October 27, 1989, staff of the Toronto Transit Commission responded to concerns expressed by the Commission about the long term plans for the SRT and the apparently high cost of operation compared to other transit technologies. Based on a comparison of the cost effectiveness of the

ICTS (intermediate capacity transit system) technology with subway and streetcar in the SRT corridor, the report concluded that,

> "...the costs of additional ICTS vehicles required to meet projected ridership demands are less than the capital costs required to convert to either subway or LRT technology"
>
> and
>
> "...capital costs would be less to extend the existing SRT technology to SRT technology to Sheppard and Markham compared to a change to either subway or LRT technology". (page 7)

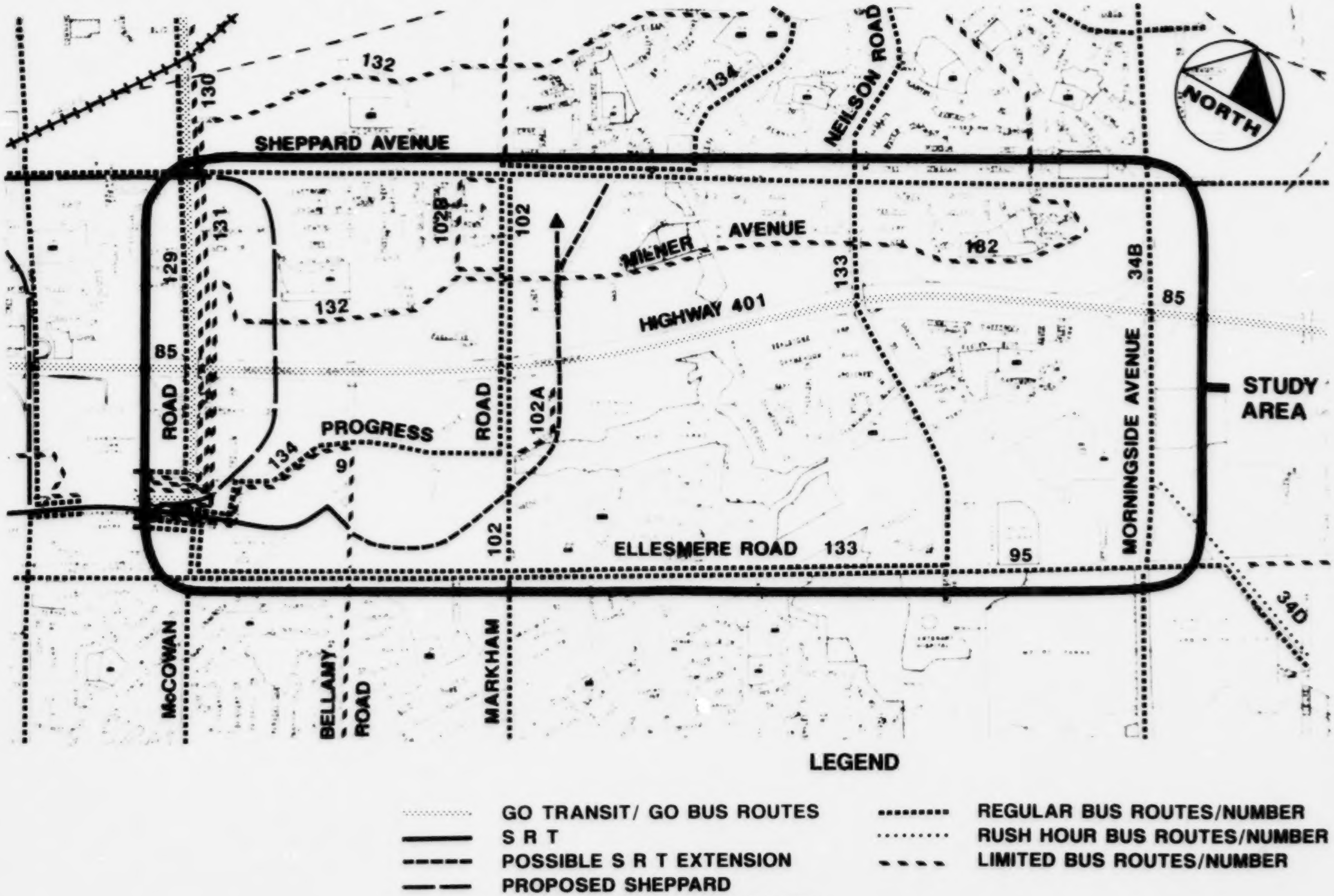
Therefore, at its meeting on November 7, 1989 the Toronto Transit Commission approved the decision to continue with the existing ICTS technology and to complete further feasibility engineering studies for its extension. Further analysis is now being pursued and is discussed in Section 4.3.1.

3.1.3 Surface Transit

The study area is well served by bus transit with the City Centre being the focal point. Currently eleven TTC bus routes connect to the City Centre where buses have an exclusive roadway access. The bus routes are shown on Exhibit 5.

GO Transit has two bus routes which serve the study area and stop at the City Centre where there are four bays available for GO buses. The East GO bus provides full day service between Oshawa/Pickering and York Mills/Yorkdale, via Highways 401 and 2. There is an intermediate stop at the Scarborough City Centre.

The Uxbridge GO bus makes six trips per day between Uxbridge and the City Centre, using McCowan Road.



TRANSIT CONSIDERATIONS

Exhibit 5

3.1.4 Sheppard Subway

The first phase of the Sheppard Subway (from North York City Centre to Victoria Park) is supported by the City of Scarborough and Metropolitan Toronto although a commitment has been made to review the transit priorities every five years. Existing cost sharing would require that 75% of the funding be provided by the Province of Ontario. In May 1988, the Minister of Transportation advised that the option to implement the Sheppard Subway should be protected and reviewed in five years. The Provincial perspective is that the high cost of the Sheppard Subway (+$1.5 billion) would limit other transportation initiatives while lower cost options (eg. busway, express buses) could be implemented to address congestion and promote continued growth of the North York City Centre. It should be noted, however, that in late 1989 an announcement was made regarding an initiative to secure private funding in addition to public funding for the construction of the Sheppard Subway.

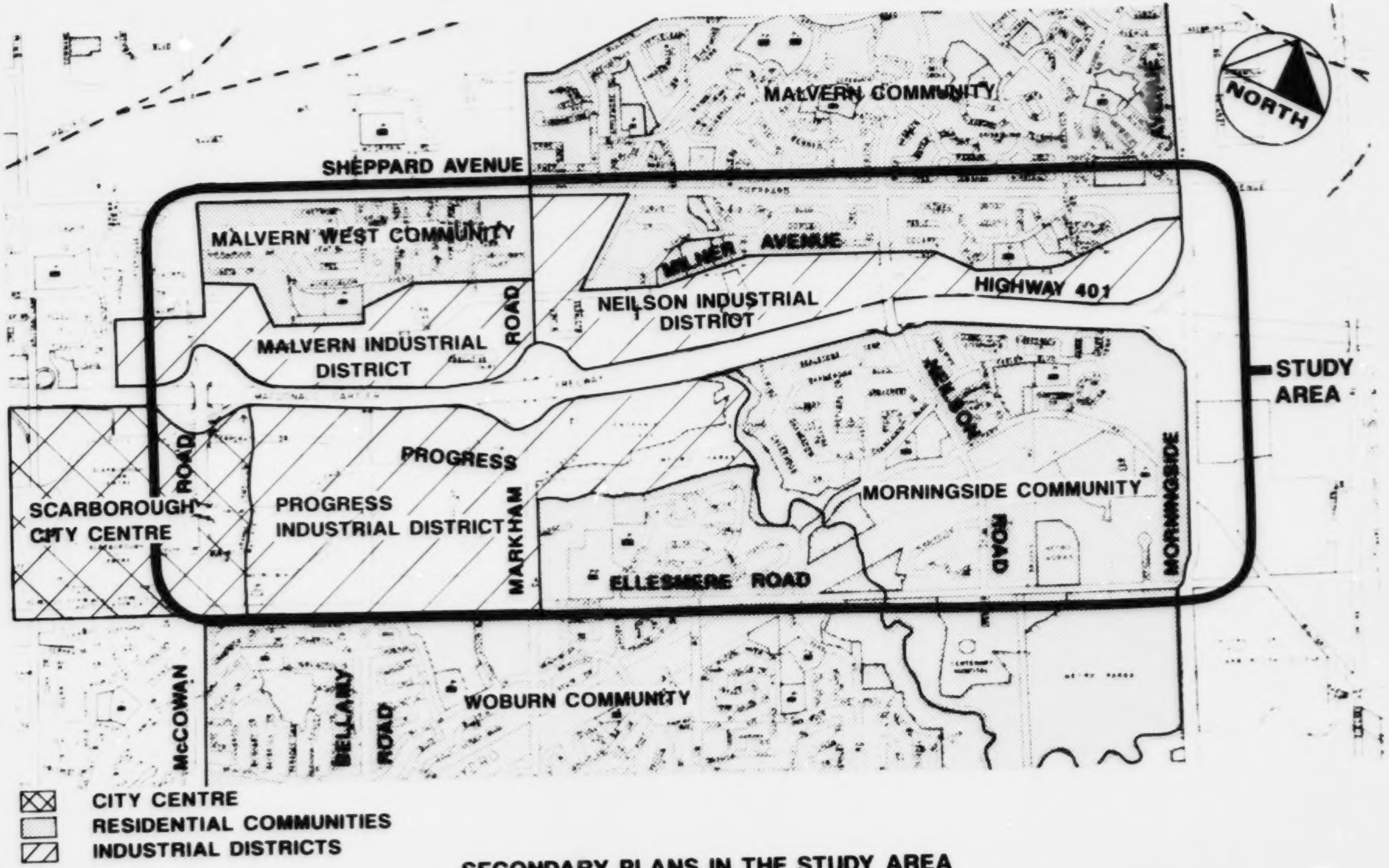
Three alternative alignments for the Sheppard Subway have been identified for further assessment. The two which are located in the vicinity of the study area are shown in Exhibit 5.

Since the Sheppard Subway is not likely to be operational to the Scarborough City Centre within the next few years and since two of the three alternative alignments do not directly affect the study area, its effects were not included in the travel demand analysis.

3.2 EXISTING LAND USE

3.2.1 Industrial Districts

The Scarborough Official Plan identifies three industrial districts within the study area (see Exhibit 6):



SECONDARY PLANS IN THE STUDY AREA

Exhibit 6

- Malvern Industrial District
- Neilson Industrial District
- Progress Industrial District (east section)

The Malvern Industrial District extends from west of McCowan Road to Markham Road and is bisected by Milner Avenue. The Neilson Industrial District extends from Markham Road to Morningside Avenue and is located on the south side of Milner Avenue.

The easterly section of the Progress Industrial District extends from Consilium Place to Markham Road and also includes the lands to the east of Markham Road between Highway 401 and the creek, most of which is part of Centennial College.

The majority of the lands within the industrial districts are designated for general industrial uses and zoned at 0.5 density with provision for higher densities adjacent to existing and proposed SRT stations south of Highway 401 and for some office uses. Therefore, the areas are characterized by low density, one storey industrial buildings.

There are also some institutional uses within the industrial areas:

- Centennial College - east of Progress Court and south of Highway 401
- St. Peter's and Paul Ukranian Catholic Church and Seniors Residence - at Scunthorpe Road and Milner Avenue
- Armenian Church - north-east corner of Markham Road and Progress Court
- Police Station - Scunthorpe Road and Milner Avenue

Recent development and redevelopment proposals are discussed in Section 3.3.

3.2.2 Residential Communities

The residential communities within the study area are shown in Exhibit 6 and include:

- Malvern West Community
- Malvern Community
- Woburn Community
- Morningside Community

The communities are characterized by low density residential development with some medium to high density residential development adjacent to the arterial roadways.

3.2.3 City Centre

The Scarborough City Centre provides a "downtown" function within the City of Scarborough. Presently there are office uses and a major regional shopping centre. In 1988, employment was provided for approximately 7,000 office employees and 3,000 retail employees. Recently, approval was given to residential development within the City Centre. The Official Plan policies indicate a target for development to accommodate at least 40,000 office jobs in the City Centre. The residential designations will permit at least 8,000 dwelling units.

The City Centre is well served by an integrated transportation network including good access to Highway 401 and Metro arterial roadways, good local road network and a good transit network including the SRT with stations at the City Centre and McCowan as well as surface transit. The current average modal split is 23% although new development constructed after the SRT was in place has modal splits as high as 35%. In light of the higher modal split experienced with a rapid transit line already in place, the City has identified an objective for ultimate development of a 55% modal split, ie. 55% of City Centre employees use transit to and from the City Centre.

3.2.4 Natural Environment

As explained in Section 2.5.1 of the Official Plan:

> "Council encourages the protection and conservation of the special natural features of the City. Particular emphasis shall be given to the protection of the waterfront, the major river valleys, ravines and watercourses. Special attention shall be directed at the protection of environmentally significant areas related to trees and vegetation, wildlife habitat, wetlands and the protection of areas susceptible to inherent environmental hazards such as flooding or erosion"

Two tributaries of the East Branch of the Highland Creek traverse the study area. All lands located within the first 10 metres above and beyond the crest of the valley slope are included in the Environmental Impact Zone (E.I.Z.). Those lands are designated as proposed open space.

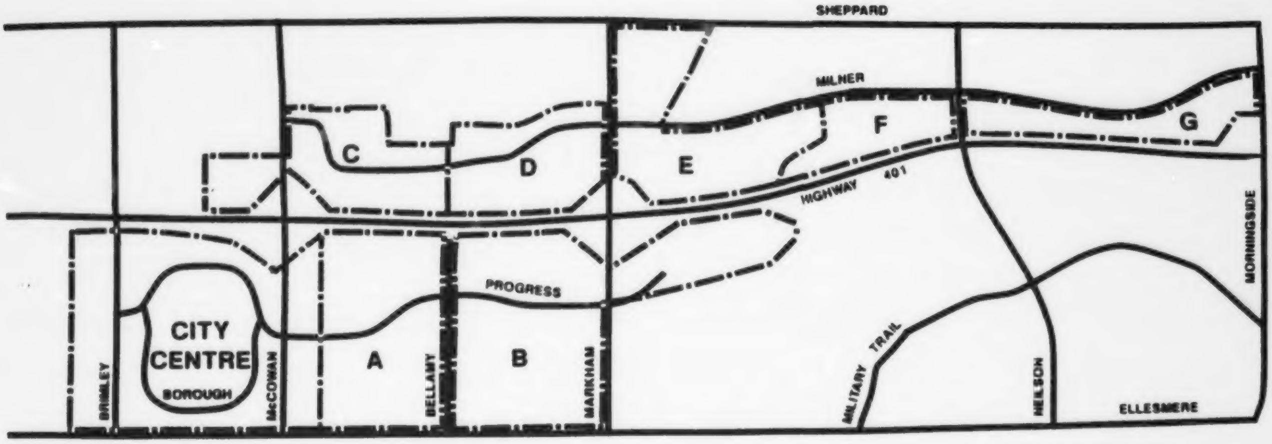
3.3 FUTURE LAND USE CONSIDERATIONS

Within the study area most of the residential areas are fully developed and stable. Therefore, the potential for additional development and/or redevelopment was assumed only for the lands currently designated as industrial. These areas were subdivided into zones A to G for the purposes of analysis (see Exhibit 7). In addition, the City Centre was considered in each of the land use scenarios.

3.3.1 Existing and Approved

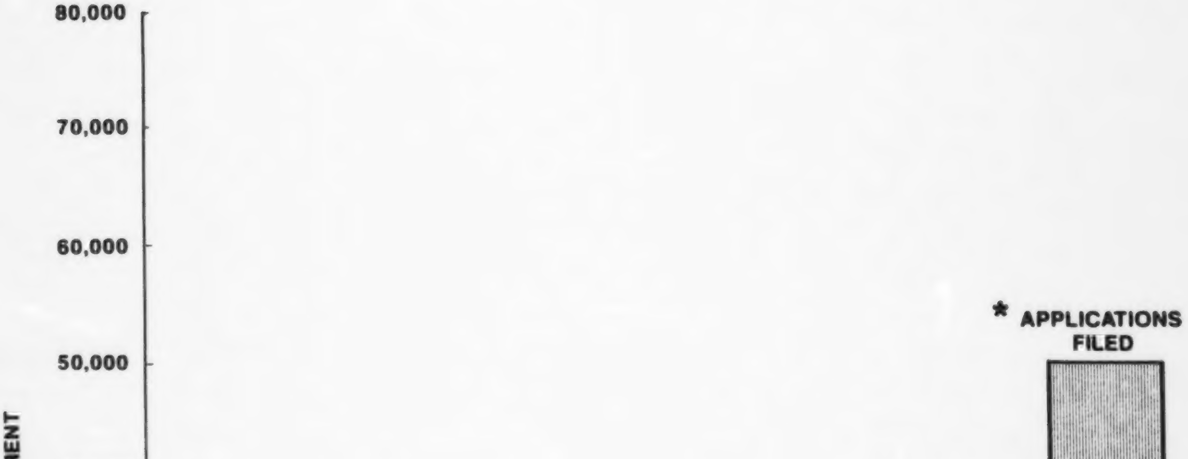
In 1986 the population and employment for the City Centre and zones A to G in the study area were:

	1986	
	Population	Employment
City Centre	0	6,875
Study Area (Zones A to G)	224	13,000
Total	224	19,875



STUDY AREA - ZONES A TO G

Exhibit 7



EMPLOYMENT WITHIN STUDY AREA
(INCLUDING CITY CENTRE)

Exhibit 8

Since the most recent available data was for 1986 (based on traffic zone data and information from the 1986 Transportation for Tomorrow Survey), this was used as the base case for the travel demand analysis which is discussed in Section 4.2.

In 1988, the employment levels were:

1988 Employment

City Centre	10,000(1)
Study Area	15,000(2)

(1) Source: 1988 City Centre Monitoring Report

(2) Source: Canada Consulting Cresap, Appendix C, page 26.

The 1988 employment level is shown graphically in Exhibit 8.

Those development applications within the study area, which were approved by January 15, 1990 are listed in Table 1 and shown in Exhibit 9. Those applications which had received final approval and/or were under construction as well as those for which final site plan approval was pending, have been included. Assuming 25m^2 of office area per one office employee, the potential employment level is shown in Exhibit 8.

3.3.2 Development Applications

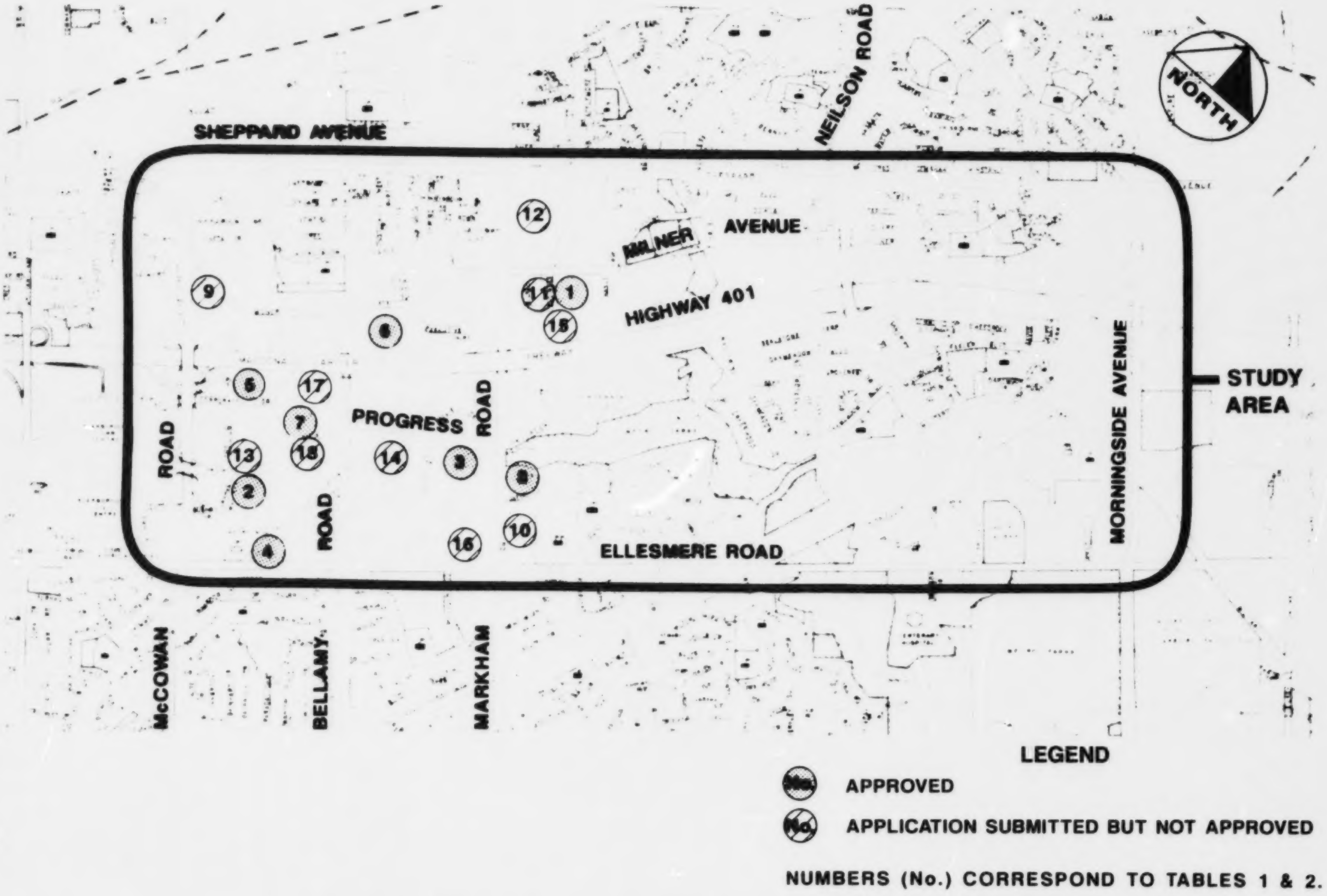
Most of the existing residential communities in the study area are completely developed with the exception of a few isolated parcels. Recently, however, the industrial districts have been the subject of much development and redevelopment interest. During recent years, the Greater Toronto Area has been experiencing rapid increases in land values and consequently development to

TABLE 1: APPROVED DEVELOPMENTS WITHIN THE STUDY AREA (AS OF JANUARY 15, 1990)

Number (as per Exhibit 9)	Project	Type of Development	
		Office/Commercial/ Other (gross floor area)	**Residential (Units)**
1	Roridan(1)	27,039 m^2	
2	Royal Bank(1)	8,062 m^2	
3	885 Progress(1)	7,127 m^2	
4	Fineway(1)	4,575 m^2	
5	Tridel/Prudential(1)	3,780 m^2	1,080
6	Konca(2)	38,555 m^2	
7	TD Bank (Phase 2)(2)	38,640 m^2	
8	Pirri's(2)	9,960 m^2	

Notes

(1) final approval and/or under construction
(2) final site plan approval pending



DEVELOPMENT PROPOSALS WITHIN THE STUDY AREA

Exhibit 9

higher intensity and higher order uses. Although development has occurred throughout the area, there has been a focus on the central business district of downtown Toronto, as well as the subcentres, including North York City Centre and Mississauga City Centre.

Additional development has not occurred at the same rate in the Scarborough City Centre and has not been as high as originally anticipated. The main reason would appear to be that most of the land is under the ownership of one group which is not pursuing any additional development at this time. Therefore, the rationale would appear to be unique to this location and not driven by location or market forces. For this reason, as well as the healthy economy, demands for office and residential condominium development, relocation of offices from downtown Toronto etc., have exerted increasing pressures for redevelopment of the industrial lands beyond the City Centre.

Development applications within the study area (as of January 15, 1990) are listed in Table 2 and shown in Exhibit 9.

Assuming 25 m^2 of office area per one office employee, the potential employment level is shown graphically in Exhibit 8.

3.3.3 Alternative Land Use Scenarios Developed for the Transportation Analysis

In order to assess the capabilities of the existing transportation network and to obtain an understanding of the transportation demands of different levels of development, a number of land use scenarios were developed. The travel demand analysis is discussed in detail in Section 4.2. The rationale used to develop the land use scenarios follows.

TABLE 2: DEVELOPMENT APPLICATIONS WITHIN THE STUDY AREA (AS OF JANUARY 15, 1990)

Number (as per Exhibit 9)	Project	Type of Development Office/Commercial/ Other (gross floor area)	Residential (Units)
9	Great Wall	76,086m^2	500
10	Kingsberg Monetary	12,061 m^2	
11	Metro East	400 m^2	504
12	Frum	91,042 m^2	3,300
13	Magnolia	92,900 m^2	520
14	City of Scarborough	1,115 m^2	
15	Roridan	55,740 m^2	450
16	Forest Woods	41,805 m^2	
17	Lee Development	104,744 m^2	1,048
18	Nor Finch Group	5,905 m2	

It should be emphasized that whether additional development over and beyond that provided by the Official Plan policies will be permitted, and if so, what type, has not been determined for the study area. Any changes which have taken place have been considered and approved on a site-specific basis.

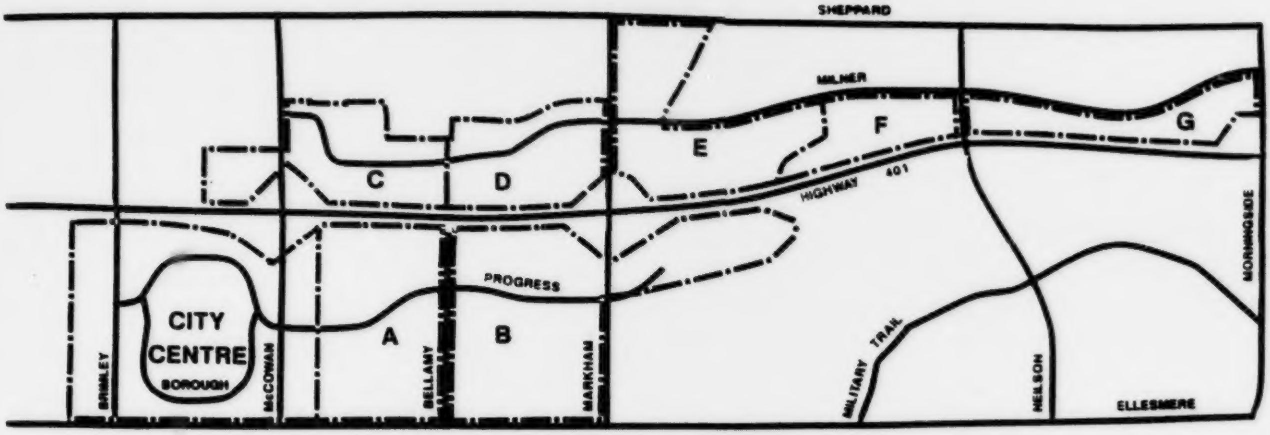
Therefore an overview planning approach was used when developing the land use scenarios in recognition of:

1) the nature of future land use will be subject to additional study; and

2) there are numerous variations in terms of type, density and location of development.

For all of the land use scenarios that were considered, the City Centre was assumed to be at its 'target' level of development. The Official Plan identifies a target office employment level of "at least 40,000". The residential designations will permit at least 8,000 dwelling units.

As explained earlier, within the study area the residential areas are fully developed other than minor infilling and are stable. Therefore, the potential for additional development and/or redevelopment was assumed only for the areas currently designated as industrial. These areas were subdivided into zones A to G for the purposes of analysis (see Exhibit 10). Within these areas, those development applications approved by May 1989 were assumed to be in place. These are also identified in Exhibit 10. Within all of the remaining industrial lands, different levels of density were then assumed. (For the purpose of analysis, within the area east of Markham Road in zone B, only the area between Markham Road and the buildings associated with Centennial College was included in the gross area calculations.) Additional development, over and above that permitted by the Official Plan was assumed, at the outset, to be industrial or office since the trips generated by those uses have the greatest



"PERMITTED" LEVEL OF DEVELOPMENT (LAND USE SCENARIO #2)

	Number of Employees				
Study Area Zone	Approved Developments (as of May 1989)		Assuming 0.5 Industrial Density on remaining Lands	Total	Equivalent Gross Floor Area (1) (m^2)
A	1,800	(T.D. Bank Royal Bank)	4,700	6,500	325,000
B	350	(885 Progress)	8,350	8,700	435,000
C	2,800	(C.U.C)	4,000	6,800	340,000
D	650	(Konca)	2,950	3,600	180,000
E	1,100	(Roridan)	4,600	5,700	285,000
F	0		1,200	1,200	60,000
G	0		2,500	2,500	125,000
		Sub Total		35,000	1,750,000
		+ City Centre		40,000	
		= Total		75,000	

(1) Assuming 1 industrial employee = 50 m^2 gross floor area

Exhibit 10

impacts on the transportation network. Other uses, such as residential, have less impact on the transportation network since they generate less trips and trips are spread out during the peak and off-peak periods. In addition, they also reduce the impacts of employee trips by reducing the length of work trips. Consequently some mixed-use scenarios were tested as well.

The basic trip generation assumptions are provided in Section 4.2.2. Using this as a base, the following trip generation information is of note and was assumed during the development of the alternative land use scenarios and the subsequent modelling work:

100 m^2 gross floor area = 1 residential unit
or
2 industrial employees
or
4 office employees

The following trips would be generated:

1 residential unit = .24 person trips during the peak hour
= .22 auto person trips (assuming 10% transit modal split)
= .18 vehicle trips (assuming 1.2 vehicle occupancy)

1 employee = .45 person trips during the peak hour
= .4 auto person trips (assuming 10% transit modal split)
= .34 vehicle trips (assuming 1.2 vehicle occupancy)

Therefore, in the peak hour 100 m^2 gross floor area generates:

- .18 residential vehicle trips
- .68 industrial employee vehicle trips
- 1.36 office employee vehicle trips

In other words, 100 m^2 gross floor area generates 7.5 more office employee vehicle trips than residential vehicle trips in the peak hour.

For the purposes of overview, a "uniform" intensity of use within the study area was assumed for any additional development. In reality, varying densities are most likely to occur, e.g. higher densities at the SRT stations, in the western section of the study area and/or in the vicinity of the Malvern Gateway. When developing the alternative land use scenarios for zones A to G, the first step was to develop a land use scenario which generally reflected the policies included in the Official Plan. The Official Plan policies provide for industrial uses except for the area bounded by Markham Road, Sheppard Avenue, the former hydro right-of-way and Milner Avenue, which is zoned agriculture. The zoning within the industrially-designated lands provides for densities of up to 0.5 density.

[The Official Plan also includes policies regarding office uses within the 'business districts' located in the industrial areas (Section 6.2.4 of Scarborough Official Plan) and higher densities in the vicinity of SRT stations south of Highway 401 (OPA 619 - Progress Industrial District). These policies were not applied at the strategic planning level.]

For the purposes of the strategic level of planning used in this study it was concluded that basic assumptions should be applied uniformly to zones A to G. Therefore, the potential employment level was determined by assuming the following:

- approved developments (up to May 1989) - assuming 1 office employee/25 m^2 gross floor area

- 0.5 industrial development on all of the remaining lands - assuming 1 industrial employee / 50 m^2 gross area

The resulting number of potential employees for the study area is 35,000. The breakdown by zones is provided in Exhibit 10.

For the purposes of this study, the resulting total employment level of 75,000 (35,000 employees in the study area and the target level of 40,000 employees in the City Centre) has been identified as the "permitted" level of development. It should be noted, however, that this is based on the general application of the Official Plan's industrial policies. The Official Plan policies do permit the consideration of office development in specific areas as long as certain criteria are met.

In order to better understand the relationship between the "permitted" level of development and the amount of development currently being proposed, the number of employees for zones A to G within the study area were compared for the two levels. The results are shown on Table 3.

Following the identification of the "permitted" level of development, the following land use scenarios were identified. Again, a uniform or "blanket" intensity of use was assumed for zones A to G (unless otherwise specified) for all lands except those which had received development approval by May 1989.

Scenario	Land Use Assumptions
1	Existing + Approved = 60,000 employees
2	"Permitted" (75,000 employees + 11,200 population)
3	"Permitted" + 30,000 employees
4	"Permitted" + 90,000 employees
5	"Permitted" + 60,000 employees + 12,000 population
6	"Permitted" + 60,000 employees
7	"Permitted" + 75,000 employees
8	"Permitted" + 75,000 employees + 35,000 population

The assumptions for each land use scenario are identified in Exhibit 11. The breakdown by zone for each scenario is included in Exhibits 11a to 11f and in Appendix B.

TABLE 3: COMPARISON OF NUMBER OF EMPLOYEES

1986 VERSUS "PERMITTED" DEVELOPMENT

	NUMBER OF EMPLOYEES							
	STUDY AREA - ZONES							
	A	B	C	D	E	F	G	Total
"Permitted" Development (0.5 industrial)	6,500	8,700	6,800	3,600	5,700	1,200	2,500	35,000
Subtract								
• 1986 Level	3,000	4,400	1,900	1,000	1,500	800	500	13,000
• Approved (as assumed for modelling)(1)	1,800 (Royal Bank) (TD Bank)	350 (885 Progress)	2,800 (C.U.C.)	650 (Konca)	1,100 (Roridan)	-	-	
• Additional approved (as per Jan 15/90)(1)	300 (Fineway) (Tridel-Prudential)	-	-	-	-	-	-	
Remainder	1,400	3,950	2,100	1,950	3,100	400	2,000	14,900
Development Proposals (1) (as of Jan 15/90)	13) Magnolia = 3,700	14) Scar. = 450	Great Wall +250	-	11) Metro East = 20	-	-	
[No. corresponds to Exhibit 9]	17) Lee Dev. = 4,200	16) Forest Woods = 1,700			12) Frum = 3,600			
	18) Nor Finch = 250				15) Roridan = 2,200			
Total - Development Proposals	8,150	2,150	250		5,820			16,120

(1) 1 office employee / 25 m^2 (then rounded)

	CITY CENTRE		STUDY AREA - ZONES A TO G						TOTAL CITY CENTRE + ZONES A TO G	
			DEVELOPMENT ASSUMPTIONS							
LAND USE SCENARIO	POPULATION	EMPLOYMENT	Approved Dev.	Residual Lands (1) ind. (GFA)(2)	office (GFA)(3)	res. (units)	POPULATION (3)	EMPLOYMENT	POPULATION	EMPLOYMENT
1986	0	6,875	No	Existing in year 1986			224	13,000	224	19,875
1988	0	10,000	No	Existing ——→			224	15,000	224	25,000
1	11,200	40,000	Yes	Existing ——→			224	20,000	11,424	60,000
2	11,200	40,000	Yes	1.47	-	-	224	35,000	11,424	75,000
3	11,200	40,000	Yes	-	1.47	-	224	65,000	11,424	105,000
4	11,200	40,000	Yes	-	2.94	-	224	125,000	11,424	165,000
5	11,200	40,000	Yes	-	2.2	8,500	12,000	95,000	23,200	135,000
6	11,200	40,000	Yes	-	2.2	-	224	95,000	11,424	135,000
7	11,200	40,000	Yes	-	2.53	-	224	110,000	11,424	150,000
8	11,200	40,000	Yes	-	2.53	25,000	35,000	110,000	46,200	150,000

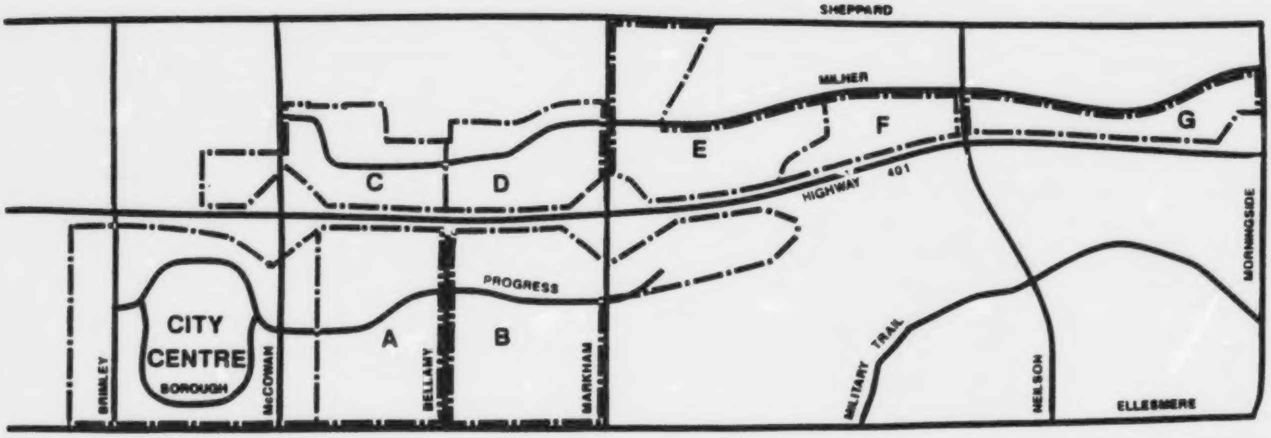
(1) Residual lands = (total area of zone) - (area of approved development)

(2) GFA - Gross Floor Area in millions of square meters. NOTE - 1 industrial employee = 50 m^2; 1 office employee = 25 m^2

(3) In 1986, the population of Zones A to G was 224. The trips associated with this population are included in the model

LAND USE SCENARIOS

Exhibit 11

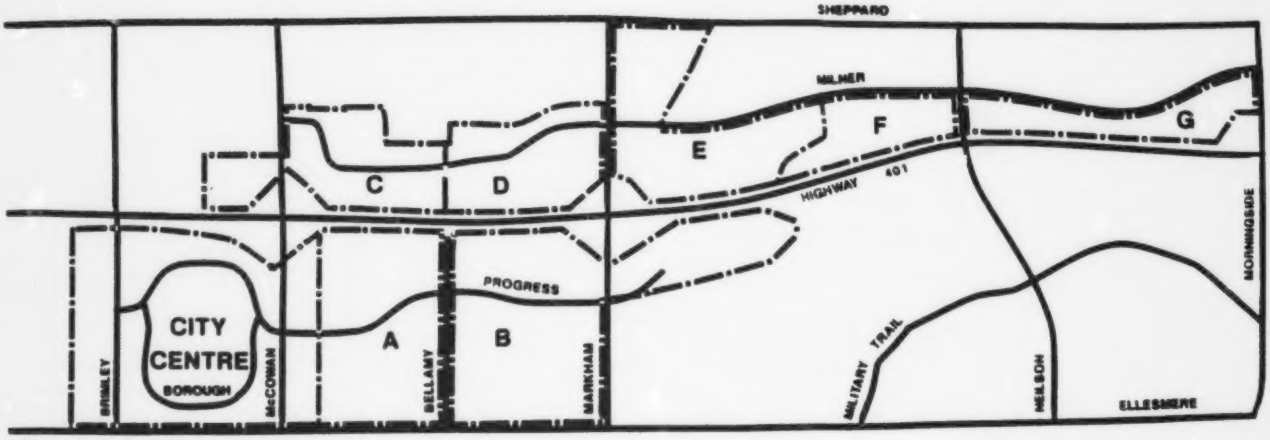


LAND USE SCENARIO #3

	Number of Employees				
Study Area Zone	Approved Developments (as of May 1989)		Assuming 0.5 Office Density on Remaining Lands	Total	Equivalent Gross Floor Area (1) (m^2)
A	1,800	(T.D. Bank Royal Bank)	9,700	11,500	287,500
B	350	(885 Progress)	17,300	17,650	441,250
C	2,800	(C.U.C.)	8,300	11,100	277,500
D	650	(Konca)	6,100	6,750	168,750
E	1,100	(Roridan)	9,300	10,400	260,000
F	0		2,400	2,400	60,000
G	0		5,200	5,200	130,000
		Sub Total + City Centre = Total		65,000 40,000 105,000	1,625,000

(1) Assuming 1 office employee = 25m^2 gross floor area

Exhibit 11a



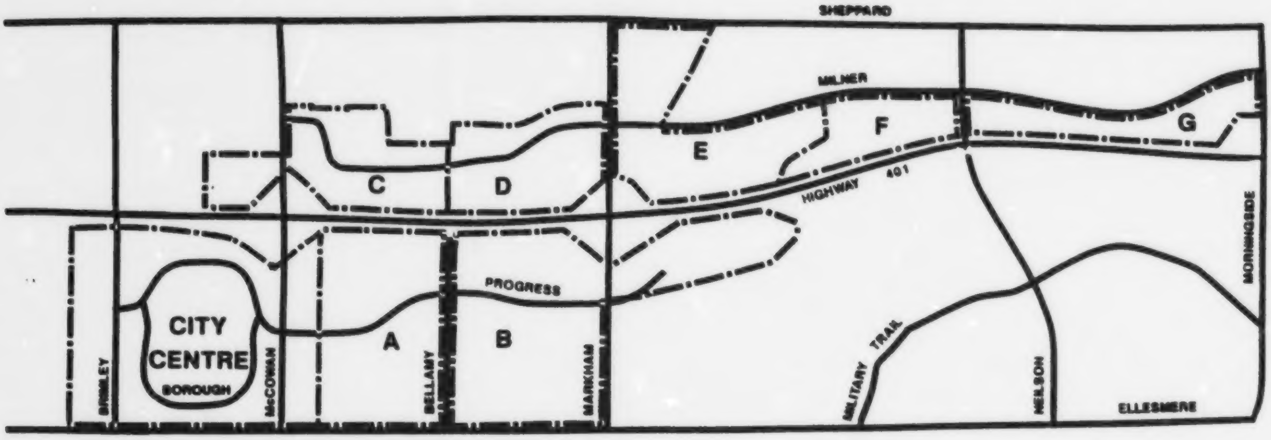
LAND USE SCENARIO #4

	Number of Employees				
	Approved Developments (as of May 1989)		Assuming 1.0 Office Density on Remaining Lands	Total	Equivalent Gross Floor Area [(1)] (m²)
Study Area Zone					
A	1,800	(T.D. Bank Royal Bank)	19,800	21,600	540,000
B	350	(885 Progress)	35,050	35,400	885,000
C	2,800	(C.U.C.)	16,800	19,600	490,000
D	650	(Konca)	12,250	12,900	322,500
E	1,100	(Roridan)	19,000	20,100	502,500
F	0		4,900	4,900	122,500
G	0		10,500	10,500	262,500
		Sub Total		125,000	3,125,000
		+ City Centre		40,000	
		= Total		165,000	

---

(1) Assuming 1 office employee = 25 m² gross floor area

Exhibit 11b

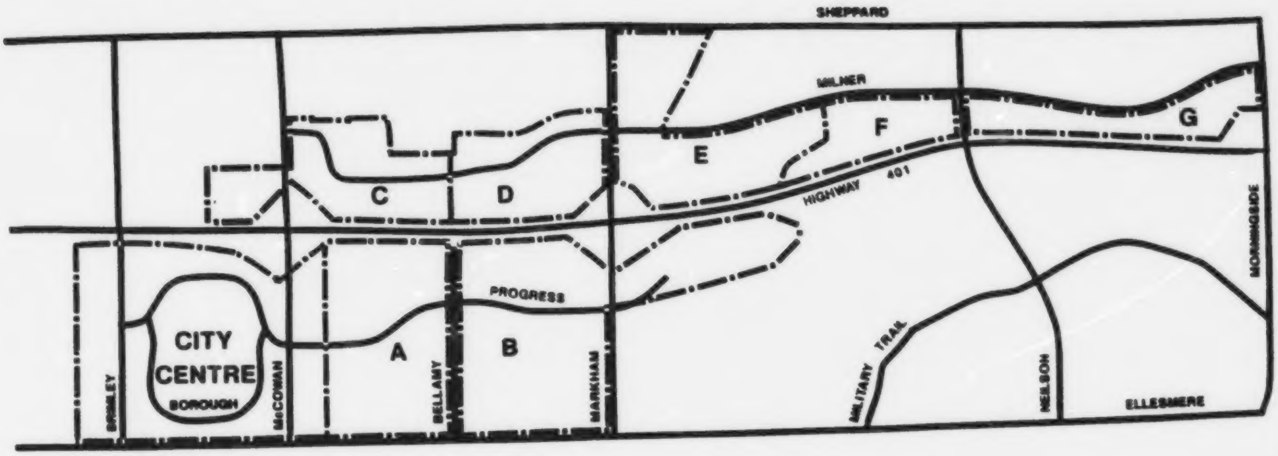


LAND USE SCENARIO #5

Study Area Zone	Number of Employees: Approved Developments (as of May 1989)		Number of Employees: Assuming 0.75 Office Density on Remaining Lands	Number of Employees: Total	Number of Residential Units [1]	Equivalent Gross Floor Area: Office [3]	Equivalent Gross Floor Area: Res. [4]
A	1,800	(T.D. Bank Royal Bank)	14,800	16,600	2,310[2]	415,000	231,000
B	350	(885 Progress)	26,150	26,500	2,180	662,500	218,000
C	2,800	(C.U.C.)	12,500	15,300	1,050	382,500	105,000
D	650	(Konca)	9,150	9,800	760	245,000	76,000
E	1,100	(Roridan)	14,200	15,300	1,180	382,000	118,000
F	0		3,700	3,700	300	92,500	30,000
G	0		7,800	7,800	650	195,000	65,000
		Sub Total + City Centre = Total		95,000 40,000 135,000	8,430	2,375,000	84,300

[1] Assuming 0.25 residential density on remaining lands
[2] Including 1080 approved units
[3] Assuming 1 office employee = 25 m² gross floor area
[4] Assuming 1 residential unit = 100 m² gross floor area

Exhibit 11c

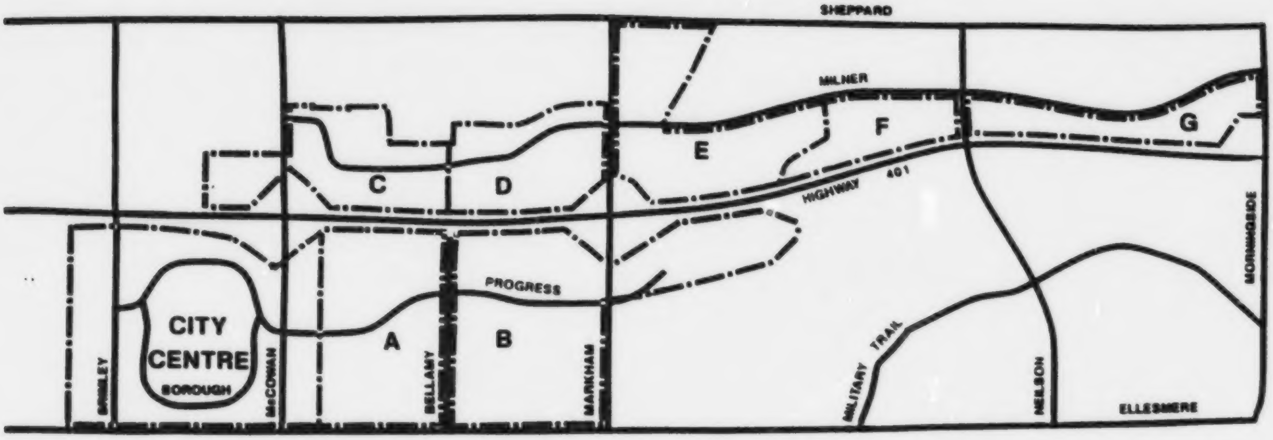


LAND USE SCENARIO #6

Study Area Zone	Number of Employees				Equivalent Gross Floor Area [1] (m^2)
	Approved Developments (as of May 1989)		Assuming 0.75 Office Density on Remaining Lands	Total	
A	1,800	(T.D. Bank Royal Bank)	14,800	16,600	415,000
B	350	(885 Progress)	26,150	26,500	662,500
C	2,800	(C.U.C.)	12,500	15,300	382,500
D	650	(Konca)	9,150	9,800	245,000
E	1,100	(Roridan)	14,200	15,300	382,500
F	0		3,700	3,700	92,500
G	0		7,800	7,800	195,000
		Sub Total		95,000	2,375,000
		+ City Centre		40,000	
		= Total		135,000	

[1] Assuming 1 office employee = 25 m^2 gross floor area

Exhibit 11d



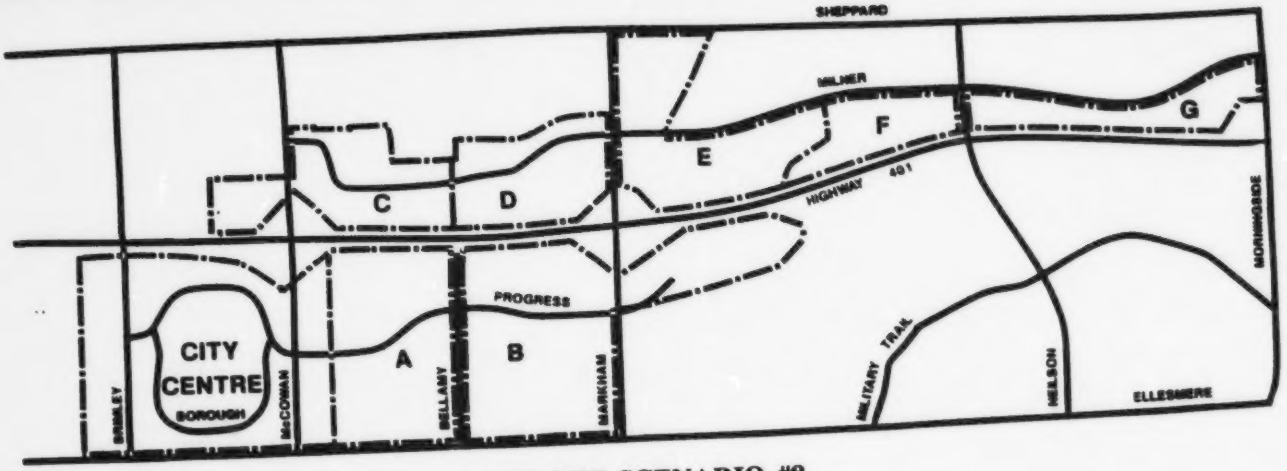
LAND USE SCENARIO #7

	Number of Employees				
	Approved Developments (as of May 1989)		Assuming 1.0 Office Density in Zones A,B,D And 0.5 Office in Zones C, F And G	Total	Equivalent Gross Floor Area (1) (m^2)
Study Area Zone					
A	1,800	(T.D. Bank Royal Bank)	19,800	21,600	540,000
B	350	(885 Progress)	35,050	35,400	885,000
C	2,800	(C.U.C.)	8,300	11,100	277,500
D	650	(Konca)	12,250	12,900	322,500
E	1,100	(Roridan)	19,000	20,100	502,500
F	0		2,400	2,400	60,000
G	0		5,200	5,200	130,000
		Sub Total + City Centre = Total		108,700 40,000 148,700 (2)	2,717,500

(1) Assuming 1 office employee = 25 m^2 gross floor area

(2) This was rounded to 150,000 for the report.

Exhibit 11e



LAND USE SCENARIO #8

Study Area Zone	Number of Employees: Approved Developments (as of May 1989)		Number of Employees: Assuming 1.0 Office Density in Zones A,B,D & E and 0.5 Office in Zones C, F and G	Number of Employees: Total	Number of Residential Units (1)	Equivalent Gross Floor Area: Office (2)	Equivalent Gross Floor Area: Res. (3)
A	1,800	(T.D. Bank Royal Bank)	19,800	21,600	6,000(4)	540,000	600,000
B	350	(885 Progress)	35,050	35,400	8,700	885,000	870,000
C	2,800	(C.U.C.)	8,300	11,100	2,090	277,500	209,000
D	650	(Konca)	12,250	12,900	3,040	322,500	304,000
E	1,100	(Roridan)	19,000	20,100	4,720	502,500	472,000
F	0		2,400	2,400	600	60,000	60,000
G	0		5,200	5,200	1,300	130,000	130,000
		Sub Total		108,700	26,450	2,717,500	2,645,000
		+ City Centre		40,000			
		= Total		148,700 (5)			

---

(1) Assuming 1.0 residential density in Zones A, B, D and E and 0.5 residential density in Zones C, F and G.

(2) Assuming 1 office employee = 25 m^2 gross floor area.

(3) Assuming 1 residential unit = 100 m^2 gross floor area.

(4) Including 1080 approved units.

(5) This was rounded to 150,000 for the report.

Exhibit 11f

3.3.4 Growth Analysis

In Section 4.2, Travel Demand Analysis, the traffic modelling work undertaken, to assess the operation of both the existing and modified transportation networks to handle different levels of potential development, is reviewed. At the same time, a growth analysis was undertaken in order to put into context the increase in employment, over the existing employment level, associated with the "permitted" level of development as well as the levels of development associated with the alternative land use scenarios. To this end, Canada Consulting Cresap was retained by McCormick Rankin to carry out an overview analysis.

Canada Consulting Cresap's report is included in Appendix C. In summary, they identified a wide range of potential increases in employment based on different methods of analysis:

- review of historical activity
- analysis of growth-share in the past
- application of past growth-share to future projections
- review of current development activity.

In summary, the analysis demonstrated that historically office growth within the study area including the City Centre has been modest (approximately 2,000 employees per year since 1983). Based on a review of future development interest however, the outlook for potential development in the study area is strong. This was based on total development of those proposals as of August 1989 which were under construction, approved, application pending, zoning approved (City Centre sites) or enquiries. If all of the foregoing was built and assuming 25m^2 of office area per one office employee, this could result in an increase of over 35,000 office employees within the study area and City Centre.

The growth analysis also considered Metropolitan Toronto Planning's Case "E" Scenario projections for employment in terms of the City of Scarborough and the study area. Although the Case "E" Scenario has not yet been adopted by Metropolitan Toronto Council, it is being used by Metropolitan Planning for planning purposes. It has a strategic population target (which is higher than previously assumed) which is based on the objective of a more compact urban structure. The latter was identified as an important goal in order to minimize the length / duration of the journey to work trips and to reduce the rate of agricultural land absorption outside the Metropolitan Toronto area. Employment projections were subsequently derived from the population forecasts. Although Scarborough's growth share is assumed to increase, the absolute increases which are projected for the study area and the City Centre are very modest: a level of 33,300 by year 2011 which represents an increase of approximately 8,000.

The growth share analysis showed the incongruity between (i) what has occurred in the past and related projections for the future, and (ii) the level of development interest which has occurred recently and is continuing. Based on the foregoing, it was concluded that the employment level defined as "permitted" development (approximately 35,000 in the study area and 40,000 in the City Centre) represented a reasonable basis for determining effects on the existing and modified transportation networks.

4. TRANSPORTATION

The transportation analysis undertaken during the course of the study included a wide range of assessments in order to enable a full understanding of the operation of the existing network and specific intersections as well as the potential demands within the study area. The major areas of analysis were:

- intersection analysis
  - assessment of existing signalized intersections using existing traffic data
  - see Section 4.1

- travel demand analysis
  - analysis of the existing and modified transportation networks for various levels of development
  - see Section 4.2

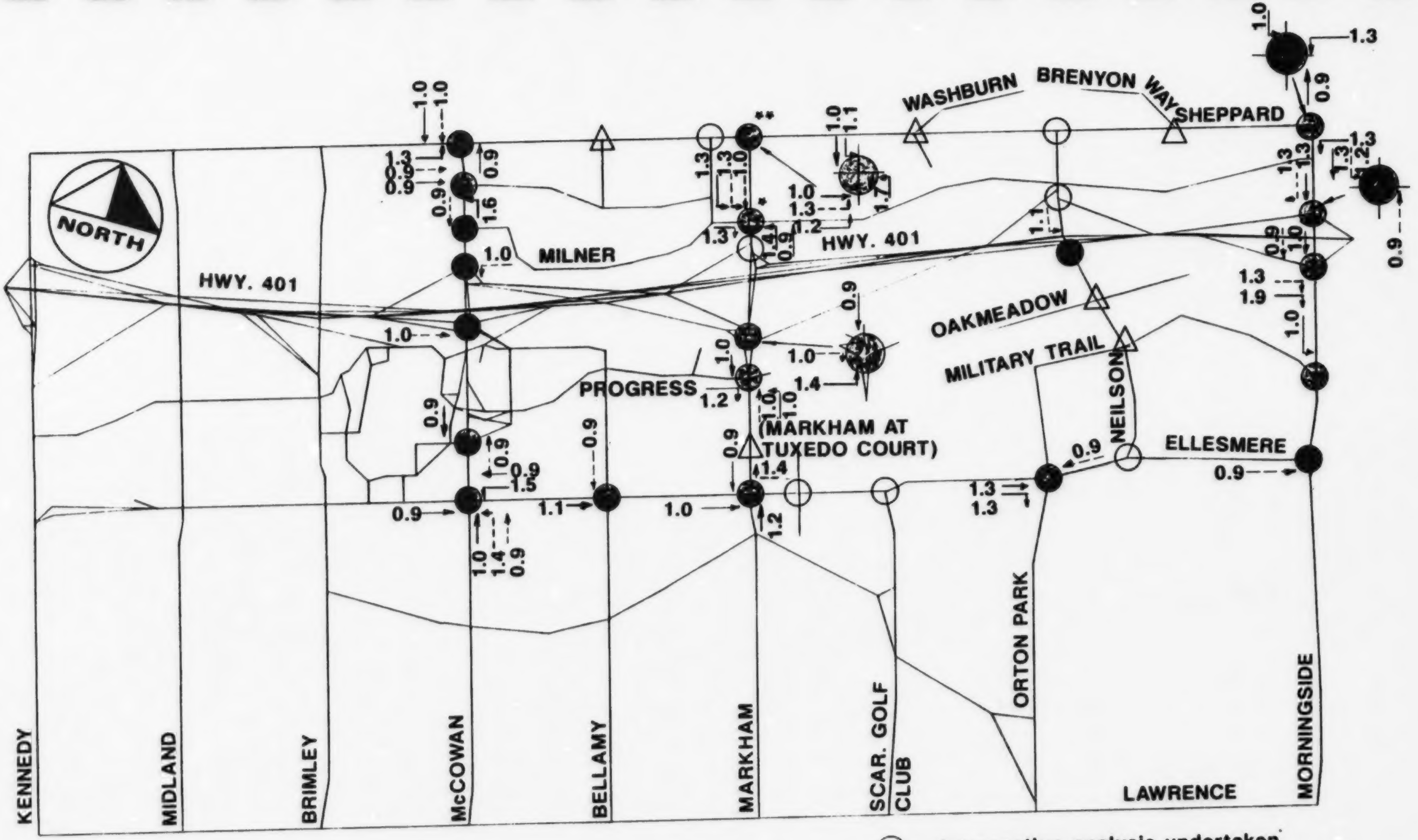
- possible additions to the transportation network
  - individual assessment of each addition to the network
  - see Section 4.3

4.1 INTERSECTION ANALYSIS

4.1.1 Methodology

Within the study area there are 33 signalized intersections as shown in Exhibit 12. A capacity analysis was carried out for each signalized intersection using the computer program 'CAPACITY' which was developed by the Metropolitan Toronto Transportation Department. Facilities at the Metropolitan Traffic Control Centre were used during the analysis. The technical report is included in Appendix D while the main findings are included here.

The 'CAPACITY' program utilizes the following data:



○ - Intersection analysis undertaken

● - through movement v/c ≥ 0.85
turning movement v/c ≥ 1.0

1.0 - v/c value
a.m. peak hour direction

1.0 - v/c value
p.m. peak hour direction

△ - Signalized intersections for
which traffic data unavailable

* Markham/Milner - new timing effective on June 13, 1989

** Markham/Sheppard - new timing not effective yet

INTERSECTION ANALYSIS
(EXISTING TRAFFIC CONDITIONS)

Exhibit 12

- intersection layout
- traffic volumes
- signal timing

4.1.2 Computer Input

The Metropolitan Traffic Control Centre has a series of traffic counts for most signalized intersections. The City of Scarborough also provided traffic counts for some of the major intersections which were used if they were more up-to-date than the Metro information.

The Metropolitan Traffic Control Centre provided the existing signal timing information including cycle length, flashing green and phasing as well as the existing lane arrangements. The assignments to a shared lane (ie. shared right and left turning lane) were adjusted manually based on information provided by Metropolitan Toronto. In addition, two field checks were made on May 4 and 24, 1989 to confirm the data regarding lane arrangements and signal timing.

In the 'CAPACITY' program, the right-turn-on-red condition can not be simulated. However, a review of the traffic data showed that this movement was not the critical consideration at the intersections studied and consequently no supplementary analysis was undertaken to evaluate conditions for right turn movements.

4.1.3 Results of Analysis

To determine the operation of each movement through an intersection, the level of service was determined. Level of service is defined as the actual volume (V) divided by the theoretical capacity (C). The resulting factor is then compared to standard criteria. During discussions with staff of the Metropolitan Toronto Transportation Department, they advised that the criteria for determining the acceptable "upper threshold" were as follows:

through movement - V/C ≥ 0.85
left turn movement - V/C ≥ 1.0

These criteria were applied to the results of the analysis for each intersection. Those intersections for which operational problems were identified are shown on Exhibit 12.

Following this, those intersections operating at or above this upper threshold were assessed in terms of possible modifications to improve the level of service. Possible modifications include changes to existing lane arrangements, the addition of lanes and changes to the existing signal timing. In this regard, the Metropolitan Toronto Transportation Department identified the following current practices for intersection design:

- maximum intersection cross-section of seven lanes (based on pedestrian crossing constraints in urban conditions and limitations placed on signal timings).

- double left turn lanes are not encouraged due to constraints placed on pedestrian movements, complications to signal phasing and the fact that such measures introduce a permanent feature to address a peak period condition.

Further to these points, it is recognized that in certain cases, where conditions permit, these design features could be candidate measures for consideration. On the other hand, consideration of measures to mitigate the undesirable aspects of these design features could be considered instead. For example, right turn channelization would provide pedestrian refuge and could be considered in those cases where the proposed intersection cross-section is greater than seven lanes. Consequently, whether or not they are pursued in the near future, the protection of property for these modifications should be considered.

It should be noted that the identified possible improvements are for consideration only. Each intersection will be subject to more detailed analysis by the City of

Scarborough and Metropolitan Toronto prior to any changes being approved by the Councils of either municipality. Where a modification is approved, the required funding will subsequently have to be obtained, prior to any changes being made.

The full technical report is included in Appendix D while the main intersections are discussed as follows.

McCowan Road and Markham Road are the two main north-south roadways within the study area while Milner Avenue provides the only east/west access north of Highway 401 and Progress Avenue provides the main east/west access south of Highway 401. Therefore the three intersections of primary significance within the study area are:

- Milner Avenue/McCowan Road
- Milner Avenue/Markham Road
- Progress Avenue/Markham Road

The proposed improvements to these intersections are identified as follows. Possible improvements to the other intersections are identified in the intersection report.

Milner Avenue/McCowan Road

This intersection is presently operating at capacity with the southbound through movement in the a.m. peak hour being the critical movement. The provision of exclusive northbound and southbound right turning lanes and a change in the signal timing to increase the north/south timing could improve capacity so that a potential growth of 25% in the existing volumes could be accommodated.

Milner Avenue/Markham Road

This intersection is presently operating far beyond its capacity with the southbound through and left movements being critical in the a.m. peak hour and the northbound left and southbound left being critical in the p.m. peak hour. The provision of exclusive northbound and southbound right turning lanes and a change in the signal timing to increase the north/south timing could improve capacity so that a potential growth of 15% in the existing volumes could be accommodated.

Progress Avenue/Markham Road

This intersection is currently operating beyond its capacity with the southbound through movement in the p.m. peak hour being the critical movement. The addition of an exclusive southbound right turning lane and an eastbound double left turn as well as a subsequent adjustment in the signal timing would allow for a potential additional 15% growth in traffic.

4.2 TRAVEL DEMAND ANALYSIS

4.2.1 Background

The purpose of the travel demand analysis was to determine the effects on the existing and modified transportation networks of various levels of development. The full analysis is documented in a separate report and summarized here.

Currently the City of Scarborough uses the transportation planning package called 'MOTORS' as the travel demand analysis tool for transportation modelling.

In order to expand on the strategic and sensitivity planning aspects required for this study, a modelling approach was developed that created a sub-area trip table reflecting the origin-destination of the traffic entering and exiting the study area. This trip table could then be modified to reflect changes in land use, travel patterns and transit modal split. The methodology used in developing the modelling approach is summarized in Appendix E. The detailed technical report is on file with the City of Scarborough Planning Department.

4.2.2 Application

The travel demand forecasting model developed for this study allowed for a strategic planning overview of the traffic impacts and the identification of the transportation network required to accommodate the various land use scenarios with and without an increased transit mode split as a result of the SRT Extension north of Highway 401.

Land Use Scenarios

The land use scenarios considered were industrial, office, residential or a combination of office and residential. The population and employment objectives (11,200 population and 40,000 employment) outlined in the Scarborough City Centre Secondary Plan along with the 55% policy transit mode split for the City Centre area was included and common to the eight land use scenarios identified as follows:

Scenario	Land Use
1	Existing (1986) + approved = approximately 60,000 employees
2	"Permitted" (75,000 employees + 11,200 population)
3	"Permitted" + 30,000 employees
4	"Permitted" + 90,000 employees
5	"Permitted" + 60,000 employees + 12,000 population
6	"Permitted" + 60,000 employees
7	"Permitted" + 75,000 employees
8	"Permitted" + 75,000 employees + 35,000 population

(The rationale for the land use scenarios is discussed in Section 3.3.3).

The AM peak hour generations and attractions for each of the land use scenarios were calculated and used as the control totals input to the fratar program to create eight future scenario trip tables from the 1986 AM peak hour auto trip table.

The following assumptions were used for trip generation. These were based on data available from the 1986 Transportation for Tomorrow Study and discussions with the City of Scarborough.

Employment

- .45 trips generated during the peak hour for each employee (trip generation rate)
- 1.2 vehicle occupancy rate

Residential

- 1 unit is occupied by an average of 1.4 persons
- .24 vehicle trips generated per unit during the peak hour
- 1.2 vehicle occupancy rate

Network Assumptions

A capacity restraint assignment technique was used to assign the eight scenario trip tables to two (2) network configurations, namely a base road network and an ultimate road network.

The base network reflected the existing road network with the planned Highway 401 collector-distributor system in place east of Markham Road. The ultimate network included the widening of the existing road network to the cross-section allowed within the existing right-of-way (ie. 4 lane Milner Avenue), the Highway 401 collector-distributor system and the following additional roadway links, which are discussed in detail in Section 4.3:

- Milner/McCowan Grade Separation
- Executive Court Extension
- Progress Court Extension and Partial Interchange
- Bellamy Road Overpass
- Bushby Drive Extension (and Grangeway Connection)
- Consilium Overpass
- Neilson/Milner ramps to Highway 401

The assignments were analyzed from an overall impact to the transportation network with the use of network traffic assignment flowmaps comparing the forecasted travel demands to the available roadway capacity as well as an assessment of individual link volumes and their resulting impacts.

A sensitivity analysis was carried out on five alternative networks which reflect different combinations of base network plus additional roadway links in order that the benefits/disbenefits of each network could be determined.

Transit Modal Split Assumptions

With respect to increased future transit modal split, two scenarios were analyzed. Although general levels of transit usage were assumed, it should be noted that usage would vary throughout the study area.

The first scenario assumed the existing transit modal split based on the 55% policy target for the City Centre and data from the 1986 Transportation for Tomorrow Survey. The assumed modal splits were (see Exhibit 13):

55%	within the Scarborough City Centre
20%	south of Highway 401, east of McCowan Road
15%	north of Highway 401, west of Markham Road
10%	north of Highway 401, east of Markham Road

The second scenario reflected the transit modal splits that could be anticipated if the SRT was extended from its present terminus east of McCowan Road northeasterly to Sheppard Avenue. The modal splits were increased to reflect the increased use of transit due to the provision of a higher order of transit, specifically the SRT Extension, and the associated additional surface transit service as well as the development of the Malvern Gateway. The assumed transit modal splits were (see Exhibit 13):

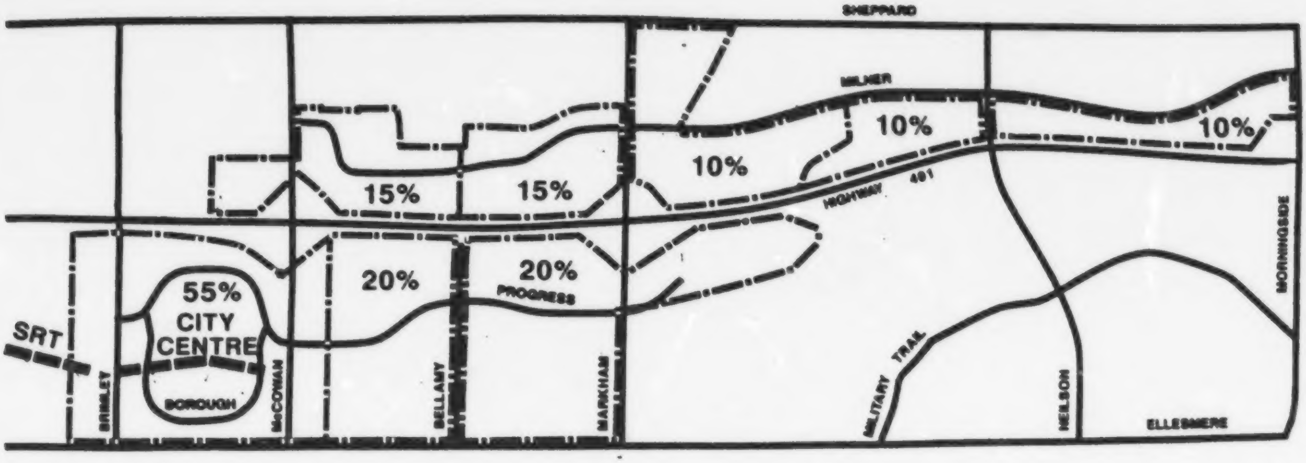
55%	within the Scarborough City Centre
30%	south of Highway 401, east of McCowan Road
20%	north of Highway 401, west of Bellamy Road
30%	north of Highway 401 between Bellamy Road and Washburn Way (east of Markham Road)
15%	north of Highway 401 east of Washburn Way

Model Runs

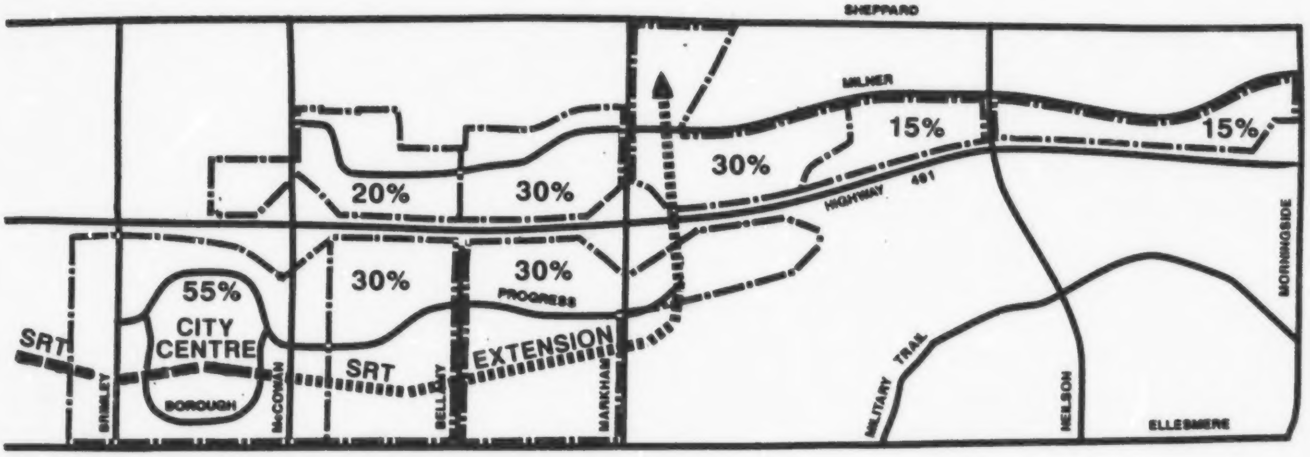
The strategic planning overview required several model runs in order to determine the impacts of various levels of proposed development on the transportation networks, the impacts of the individual network links and the impacts of increasing the transit modal split. A summary of model runs carried out as part of the Strategic Planning Overview are shown on Table 3.

4.2.3 Travel Demand Analysis - Findings and Conclusions

The findings from the Strategic Planning Overview are summarized with respect to the impacts of through traffic, impacts of development scenarios on transportation networks and the impacts of increased transit modal split (SRT Extension to Sheppard Avenue).



EXISTING NETWORK



MODIFIED NETWORK

__ % - Percentage of employees using transit in the peak periods.

MODAL SPLIT ASSUMPTIONS

Exhibit 13

The travel demand forecast model runs identified in Table 4 provided the Strategic Planning Overview required to assess:

1) the impacts of various development scenarios on the transportation networks;
2) the effects of the roadway links; and,
3) the effects of the SRT Extension.

These are discussed in the following sections.

4.2.3.1 Impacts of Various Land Use Scenarios on the Transportation Networks

The effects of the various land use scenarios are summarized in Exhibit 14.

The assignment analysis identified that the existing road network plus the Highway 401 collector-distributor system could accommodate, with isolated local problems, land use scenario 2 namely the "permitted" level of development. Land use scenarios with higher densities and higher order land uses would require substantial transportation improvements to be made.

A number of transportation modifications within the study area which had been discussed in the past were incorporated into an ultimate network (see Section 4.2.3). Scenario 3 ("permitted" + 30,000 employees) and Scenario 4 ("permitted" + 90,000 employees) were assigned to determine the adequacy of the networks. The ultimate network (including increased transit service) could accommodate the level of development assumed in Scenario 3 with spare capacity in the network at certain locations. However, the ultimate road and transit improvements would not accommodate the level of development assumed in Scenario 4. This analysis did confirm that a proposed development level between Scenario 3 and Scenario 4 could be accommodated with a transportation network reflecting ultimate road and transit improvements. Scenario 6 ("permitted" + 60,000 employees) assignment to the ultimate network indicates that the transportation system is generally at capacity with a section of Milner Avenue west of Progress Court and a section of Highway 401 west of Progress Court beyond capacity.

TABLE 4: TRAVEL DEMAND ANALYSIS MODEL RUNS

LAND USE SCENARIO	TRANSPORTATION NETWORK ASSUMPTIONS															
	NO SRT EXTENSION							WITH SRT EXTENSION								
	Base Network	Base Network Plus . . .						Base Network	Base Network Plus . . .							
		Executive	Bellamy	Progress Ext.	Progress Ext. Executive 6L Milner	Executive Bellamy	Progress Ext. Bushby Neilson/401 Milner/McC Bellamy 6L Milner Executive		Progress Ext.	Progress Ext. Bellamy Executive 6L Milner	Progress Ext. Bushby Neilson/ 401	Progress Ext. Bushby Neilson /401 Consilium	Bellamy Bushby Neilson/401 Milner/McC	Progress Ext. Milner/Mc Bellamy	Progress Ext. Bushby Neilson/401 Milner/McC Bellamy 6L Milner	Progress Ext. Bushby Neilson/401 Milner/McC Bellamy 6L Milner (Ultimate Network)
1	x															
2	x	x	x	x	x	x	x		x	x						
3							x	x								x
4	x															x
5																x
6																x
7																x
8								x			x	x	x	x	x	x

LAND USE SCENARIO	BASE ROAD NETWORK (EXISTING + 401 COLLECTORS)	'ULTIMATE' ROAD NETWORK + SRT EXTENSION
1 (Existing + Approved)	no major network deficiencies although some localized operational concerns	
2 ("Permitted") (75,000 employees)	network generally functions adequately, however, • Milner is approaching capacity between McCowan and Markham • McCowan/Milner intersection is beyond capacity • Markham/Milner intersection is beyond capacity	
3 ("Permitted" + 30,000 employees)	West of Markham • north of 401, network is beyond capacity • south of 401, network is approaching capacity East of Markham • both north and south of 401, network is approaching capacity • Milner is beyond capacity	road and transit improvements accommodate level of development with spare capacity in capacity in certain locations
4 ("Permitted" + 90,000 employees)	entire network subject to demands far beyond capacity	road and transit improvements do not accommodate level of development system beyond capacity with no residual capacity to handle increases in through traffic
6 ("Permitted" + 60,000 employees)	entire network subject to demands far beyond capacity	system at capacity

ASSIGNMENT OF TRIPS TO TRANSPORTATION NETWORK

Exhibit 14

4.2.3.2 Effects of the Individual Roadway Links

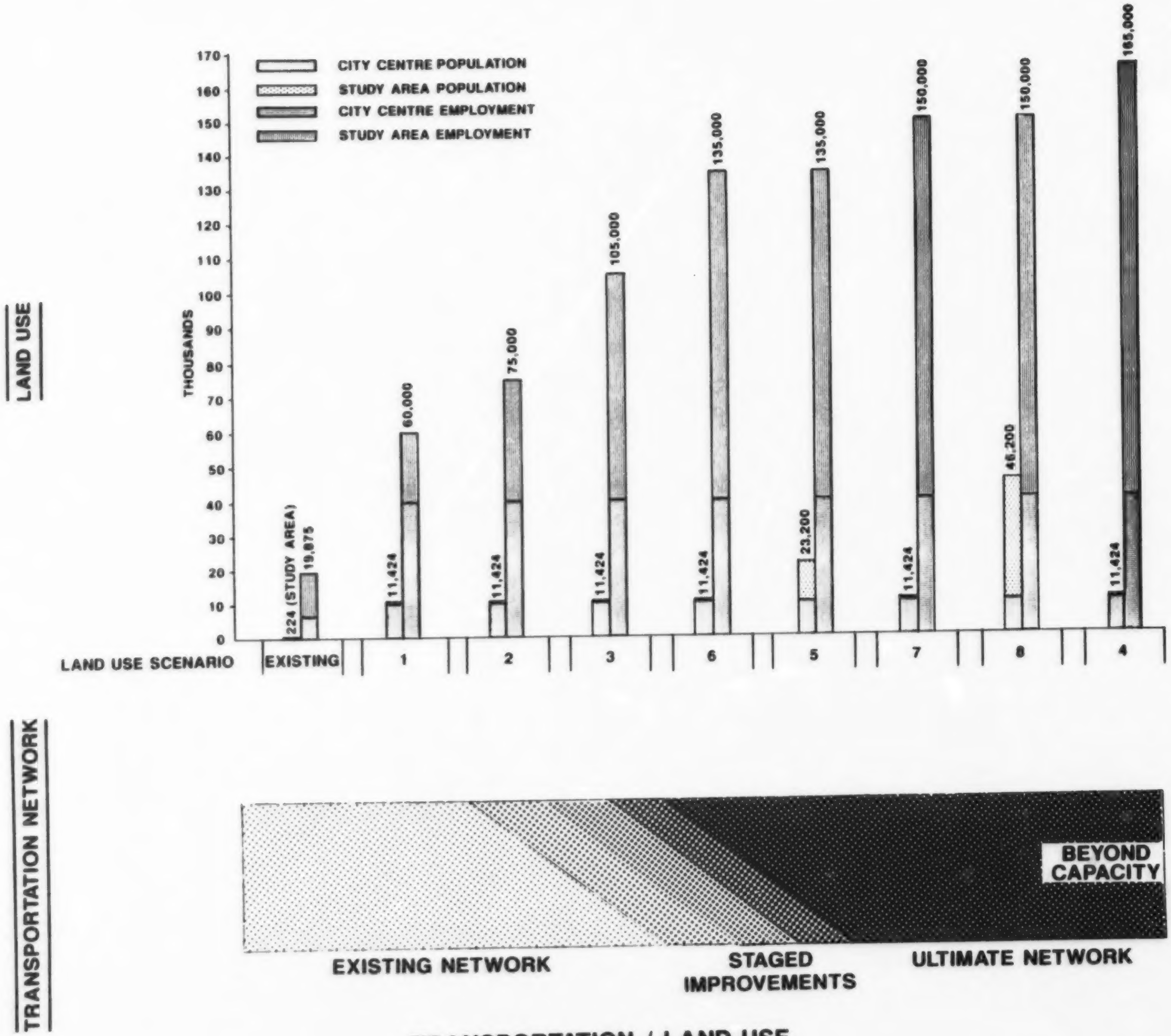
The results of the link analysis were used to determine the effects of the individual roadway links which are discussed in Section 4.3 Possible Additions to the Transportation Network under Section 4.3.2 Roadways.

4.2.3.3 Conclusions Re: Land Use/Transportation

Based on the results of the model runs for the land use scenarios and the individual facility link runs, a matrix was developed to illustrate the relationship between the transportation and land use considerations. The matrix is included as Exhibit 15. On one hand, the existing transportation network (including the Highway 401 collectors), without the SRT Extension generally functions adequately for the "permitted" level of development although there are some localized areas of congestion.

On the other hand the effects of Scenario 4 ("permitted" + 90,000 employees) are such that the ultimate transportation network with the SRT Extension in place is subject to demands far beyond its capacity.

This therefore provides an understanding of the limits of the transportation networks. Within these limits, the timing of the individual additions to the networks is directly influenced by the nature, location and timing of development. Therefore, their implementation cannot be identified specifically. The additions are assessed in Section 4.3 following which an ultimate transportation system is identified. The relative priority of the additions is addressed in Section 7.2.



TRANSPORTATION / LAND USE
DEVELOPMENT MATRIX

Exhibit 15

4.2.3.4 SRT Extension

Several of the model runs compared the effects of specific land use scenarios on the ultimate roadway network with and without the addition of the SRT Extension. These were identified in Table 4, page 69. In order to provide a general understanding of the additional transit ridership resulting from the addition of the SRT Extension as well as the associated potential employment level and annual tax revenue, a coarse assessment was carried out. The results are summarized in Table 5.

The analysis carried out for the computer model runs assumed that a uniform level of development and uniform transit modal splits occur within each of the study zones A to G. In reality, however, it is likely that there will be an intensification of development around the SRT stations and that higher transit modal splits will occur in close proximity to the stations (i.e. if the walking distance is shorter or if a transfer to bus is not required then more people are likely to use the SRT).

Based on the application of Scarborough's Official Plan policy of permitting three times (3x) possible density within 150 metres of an SRT station (south of Highway 401) and applying this to stations along the proposed SRT Extension (i.e. at Bellamy Road, Markham Road, Centennial College, Milner Avenue and Sheppard Avenue), then an additional 25,000 office jobs over and above the "permitted" level of development could occur. The potential transit ridership associated with this additional development level ranges from 3,500 to (assuming a 30% modal split transit) to 5,500 (50% transit modal split) during the peak hour. The annual tax revenue associated with an additional 25,000 office employees is approximately $45 million. The foregoing is summarized in Exhibit 16.

4.3 POSSIBLE ADDITIONS TO THE TRANSPORTATION NETWORK

As either background traffic or traffic generated by additional development increases within the study area then additions to the transportation network will

TABLE 5: SRT EXTENSION

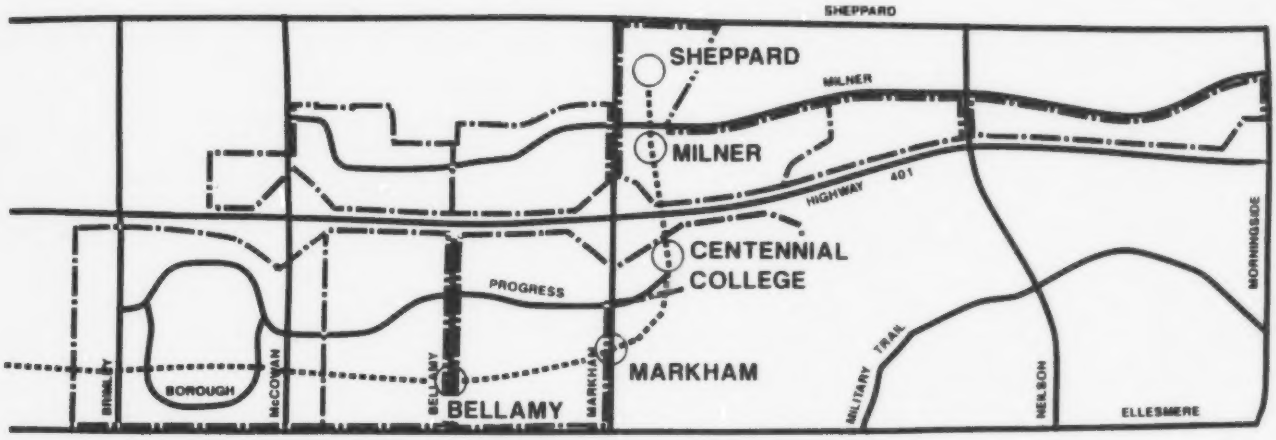
DEVELOPMENT SCENARIO (used in computer) model runs)	TOTAL TRANSIT RIDERSHIP (Pk.Hr)		ADDITIONAL TRANSIT RIDERSHIP DUE TO ADDITION OF SRT (Pk.hr)	LEVEL OF EMPLOYMENT ASSOCIATED WITH ADDITIONAL RIDERSHIP DUE TO SRT(2)	ANNUAL TAX REVENUE ASSOCIATED WITH THIS EMPLOYMENT(3)
	no SRT(1)	with SRT(1)			
Scenario 2 = 75,000 empl.	2,610	4,350	1,740	3,870	$6,600,000
Scenario 3 = 105,000 empl.	4,700	7,870	3,170	7,050	$12,000,000
Scenario 8 = 150,000 empl.	8,000	13,650	5,650	12,560	$21,000,000

(1) Modal splits are as shown in Exhibit 9.

(2) No. of employees is calculated on basis of 1 employee generating 0.45 trips during the peak hour (this allows for the fact that not everyone travels in the peak hour and not all employees are at work every day).

(3) This figure is based on the estimate that 1 office job creates $1,700 in annual tax revenue (see Section 4.3.2).

[NOTE: This assessment represents an overview level of analysis]



○ **POSSIBLE STATION LOCATIONS**

Additional Employees (Over and above "Permitted" Level)	=25,000
Number of Trips generated in A.M. peak hour	=11,250
30% Modal Split	3,375 SRT Trips
40% Modal Split	4,500 SRT Trips
50% Modal Split	5,625 SRT Trips

SRT EXTENSION

POTENTIAL RIDERSHIP IN VICINITY OF PROPOSED STATIONS

Exhibit 16

be required over and above improvements to the existing intersections. Improvements to the network assessed during this study included:

- transit - rapid and surface
- roadways - new facilities and changes to existing facilities

4.3.1 Transit

There is an integral relationship among the level of transit service that is provided, the density and location of development and the level of transit ridership that is achieved. Realistically, high transit ridership can only be expected if a high order of transit is provided. Good surface transit is required as well to 'feed' into the rapid transit system. This section reviews the following:

- SRT Extension
- Sheppard Subway
- Surface Transit

4.3.1.1 SRT Extension

The Scarborough Official Plan identifies the extension of the SRT from the McCowan Yard easterly to cross Markham Road, then northerly to cross Highway 401 prior to heading to the north-east (generally following the former hydro right-of-way) and terminating at Sheppard Avenue. In the Neilson Industrial District Secondary Plan it is noted that:

> 1. The "Malvern Transit Corridor" alignment north of Milner Avenue is schematic and is only an indication that a corridor shall be protected between Milner and Sheppard Avenues east of Markham Road. The final alignment shall be determined on the basis of engineering and land use studies to establish the optimum distribution of uses.

During the course of this study the SRT Extension was assessed at a general level of detail which resulted in the identification of a series of overall findings and a range of issues for further consideration.

Background

As discussed in Section 3.1.2, during feasibility studies for the existing SRT, alternative options for a possible extension were considered. The extension to the Malvern community via the Hydro corridor was determined to be preferred. In 1986 the report "Malvern Transportation Corridor - A Review of Options" re-examined the need to protect all or part of the hydro corridor. It concluded that the corridor should be protected to Sheppard Avenue but that the ridership would not warrant the extension of the SRT north of Sheppard Avenue within the Hydro right-of-way.

The alignment of the SRT Extension from McCowan Road to Sheppard Avenue was developed at a planning level of detail by the Toronto Transit Commission in 1982/83. Currently a study is being carried out with regard to the alignment of the SRT Extension and the expanded yard location. Associated information is included in Appendix F.

Assessment

Based on the analysis as discussed in Section 4.2.4.4, the following benefits/advantages have been identified by this study for the SRT Extension:

- it provides the opportunity for higher densities of development within the corridor particularly in the vicinity of the stations and for increased transit usage within the corridor. The assessment of the SRT Extension (see Section 4.2.4.4) demonstrated that based on the application of Scarborough's Official Plan policy of permitting three times (3x) possible density within 150 metres of an SRT station (south of the Highway 401) and applying it to the SRT Extension (assuming stations at Bellamy Road, Markham Road, Centennial College, Milner Avenue and Sheppard Avenue), 25,000 additional jobs over and above the "permitted" level could occur. As a result, the potential ridership within the peak hour could range from 3,500 (30% modal split) to 5,500 (50% modal split).

- the associated benefits are maximized the earlier the implementation of the SRT Extension (i.e. a higher transit modal split will be achieved) and early implementation will enable better integration with the surrounding land use.
- it offers the opportunity to provide gateway facilities in a location which enables improved access to rapid transit for pedestrians and from the local and regional transportation networks particularly for commuters coming from north of Highway 401 and east of Markham Road. In actuality it "drives" the development of the Malvern Gateway. A fully functioning gateway requires the SRT Extension to be in place although the early development of some gateway components should be considered.
- the Malvern Gateway and SRT Extension will result in additional surface transit in order to serve the gateway as well as a reorientation of the existing service in response to changes in patterns of demand.

In terms of costs, in 1989 the Toronto Transit Commission estimated the construction cost of the SRT Extension (including the yard and the purchase of additional vehicles) to be $447 million. This cost does not include property costs.

Public Review

During all phases of the public review, much public support was identified for the SRT Extension.

Conclusion

Based on the assessment and public review, the Technical Advisory Committee identified the SRT Extension as an important transportation initiative which should be protected for and preferably implemented in the short to medium term. There are, however, many associated issues which are discussed as follows.

Issues For Further Consideration

During the course of the study, a number of issues regarding the SRT Extension were identified, namely:

1) Alignment
2) Stations
3) System integration with Sheppard Subway
4) Storage and maintenance yards
5) Staging
6) Integration with gateway facilities
7) Future course of action

1) Alignment

In order to pursue more detailed studies of the SRT Extension, Scarborough Council approved the May 23, 1989 report which resulted in the Council request:

> "1. Metro to direct the TTC to undertake, in consultation with Scarborough staff and within the context of the Milner Avenue Corridor and Malvern Gateway Transportation Study, preliminary design studies for the SRT Extension in order to define:
>
> a. the alignment, using current track curvature;

   b. station locations, land requirements, station facilities including park'n ride and kiss'n ride;
   c. the bridge details for the Highway 401 crossing.

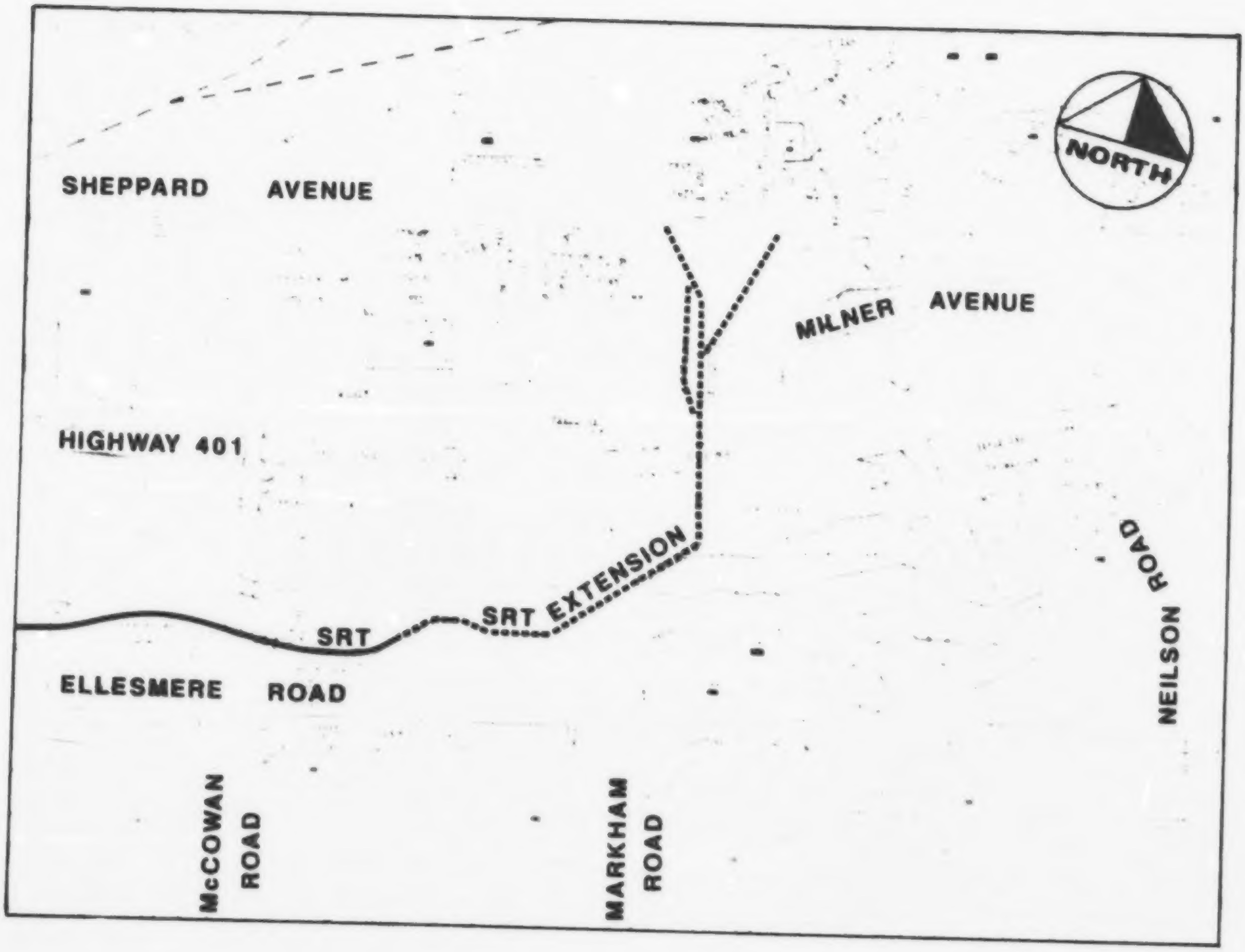
2. Metro to acquire the remaining 10% of land needed for the SRT Extension by carrying out the necessary studies and complying with the requirements of the Environmental Assessment Act.

3. Metro and the Province to fund their respective shares of the studies necessary to complete recommendations (1) and (2) above, and to commit to funding early construction of the Scarborough RT Extension to Sheppard Avenue."

Subsequently, requests were forwarded to Metropolitan Toronto and the Ministry of Transportation. In their response the Ministry noted that they will not consider additional studies/funding until the Milner Avenue Corridor and Malvern Gateway Transportation Study is completed and Metropolitan Toronto formally requests them to do so. Metropolitan Toronto and the Toronto Transit Commission have initiated the steps to enable them to proceed with this request as well as carrying out more detailed studies of the SRT Extension.

During the present study and in compliance with the Scarborough Official Plan, the Technical Advisory Committee considered the future alignment of the SRT Extension from a strategic planning viewpoint. As a result, it was concluded that it would be desirable to also consider a more westerly alignment(s) as shown on Exhibit 17.

Although previous studies demonstrated that the extension of the SRT north of Sheppard Avenue along the hydro corridor to the centre of the Malvern Community could not be justified, it is desirable not to preclude the ability to eventually extend the SRT beyond Markham Road/Sheppard Avenue. On the basis of the decision by the City of Scarborough, Metropolitan Toronto and the



SRT EXTENSION

Exhibit 17

Province to not protect the extension of the SRT to the Malvern Town Centre, the most likely future extension would be north of Sheppard Avenue within the Markham Road corridor. The latter consideration was identified in light of the opportunity for the Markham Road corridor to develop with higher density uses, the possible future relocation of the CP Rail yard and subsequent redevelopment and the possible future rail services on the two rail corridors which access the yard.

A westerly orientation in turn provides the opportunity for better integration with proposed land use and the mitigation of effects on adjacent residential area to the east and appears to provide more flexibility in terms of the transportation considerations regarding station operation/access.

Therefore, at its meeting on January 15, 1990, Scarborough Council directed staff to request the Toronto Transit Commission to study alternative alignments between Markham Road and Sheppard Avenue as part of their alignment study.

2) SRT Stations

Possible station locations have been identified in the vicinity of Bellamy Road, Markham Road, Centennial College, Milner Avenue and Sheppard Avenue. The station locations are being addressed through the alignment study currently being undertaken by TTC.

3) System Integration with Sheppard Subway

All of the Sheppard Subway alternatives currently under consideration terminate at the Scarborough City Centre. With the identification of the desirability of developing the Malvern Gateway, the connection of the Sheppard Subway to the site and the SRT Extension becomes a possible consideration. It, however, will have to be considered by the Sheppard Subway Property Protection Study being carried out by the Toronto Transit Commission which is outside the scope of this study. In light of the foregoing, the Technical Advisory Committee concluded that the possibility of connecting the SRT Extension and the Sheppard Subway should not be precluded. Due, however, to the continuing deferral of the Sheppard Subway, the Technical Advisory Committee also concluded that the ability to connect the Sheppard Subway and SRT Extension should not unduly constrain the implementation of the SRT Extension and the development of the Malvern Gateway. As long as the possibility of providing an SRT station at Sheppard Avenue is kept open, future integration with the Sheppard Subway remains possible.

4) Storage and Maintenance Yards

Additional storage and maintenance yards are required as part of the SRT Extension. Possible locations have been considered by the Toronto Transit Commission in the vicinity of the existing McCowan Yard and on the west side of the most easterly SRT alignment north of Highway 401. Currently staff of the Toronto Transit Commission in consultation with Metropolitan Toronto and the City of Scarborough is assessing additional locations.

5) Staging

The possible staging of service by the provision of shuttle buses or an exclusive busway within the corridor was considered. Staff of the Toronto Transit Commission advised, however, that where an intermediate modal change/transfer is required, particularly for a short distance, commuters usually will delay their modal change in order to bypass the intermediate transfer. Therefore commuters coming from the east and destined for the SRT would probably continue to change their mode of transit at the City Centre even if a shuttle bus was provided between the Malvern Gateway and the City Centre. They would most likely advance their transfer point if the SRT was extended to the Malvern Gateway.

6) Integration with Gateway Facilities

The SRT Extension, stations and gateway facilities should be integrated in order to maximize their use and benefits.

7) Future Course of Action

Confirming the alignment of the SRT Extension and the locations of the stations and yard, is interrelated with development of the Malvern Gateway and any development applications in the area. As explained earlier, the Toronto Transit Committee is carrying out an alignment study of the alignment developed in 1982/83 and assessing additional yard locations. At its meeting on January 15, 1990, Scarborough Council directed staff to request that Metropolitan Toronto and the Toronto Transit Commission study alternative alignments for the SRT Extension between Markham Road and Sheppard Avenue as part of their alignment study. Scarborough Council also directed staff to negotiate with affected landowners in order to enable the integration of the proposed SRT Extension and associated facilities within any development proposals.

4.3.1.2 Sheppard Subway

As noted in Section 3.1.4, three alternative alignments for the Sheppard Subway have been identified for further assessment. At the present time, however, no timing has been indicated regarding the selection of a preferred alignment and its construction. As explained in the previous section, the current study has identified the need to consider the ability to provide for the connection of the Sheppard Subway and SRT Extension in order to maximize the long term operation of higher order transit not only within the City of Scarborough but within Metropolitan Toronto as well.

In terms of the direct affects on the study area, the Technical Advisory Committee concluded that these would be minimal since two of the proposed alignments for the Sheppard Subway are not located within the study area. The one alignment that is located within the study area would have the most effect on a limited section of the study area. Due to the foregoing and the apparent long term nature of the Sheppard Subway, neither the potential levels of development nor the modal split were modified.

4.3.1.3 Surface Transit

As noted in Section 3.1.3, the study area is well served by local and regional bus transit with the City Centre being the focal point. Regarding existing bus service, staff of the Toronto Transit Commission have advised that their policy is to assess the provision of surface transit on an ongoing basis. Regarding changes to surface transit routes with the extension of the SRT and development of the Malvern Gateway, transit routes would be modified as required to maximize the provision of service and to support the gateway functions. In addition, adjacent residential communities would benefit as a result of additional bus routes within the area and more frequent service as buses serve the SRT Extension and the Malvern Gateway. It is not possible at this time to project the future service requirements in detail since they will depend heavily on the type, nature and location of future development and the resulting patterns of ridership demand.

4.3.2 Roadways

A range of reasonable additions to the roadway network within the study area was identified and assessed during the course of the study. It included both new facilities as well as changes to existing facilities. The additions were identified as being reasonable for consideration when addressing the future demands of background traffic and/or traffic generated by additional development.

The improvements considered as part of this study were:

- Highway 401 collectors (construction commenced in 1989)
- Milner/McCowan Grade Separation
- Executive Court Extension
- Progress Court Extension and Partial Interchange
- Bellamy Road Overpass
- Consilium Overpass (not recommended)
- Bushby Drive Extension
- Widening of Milner Avenue
- Neilson/Milner/Highway 401 ramps

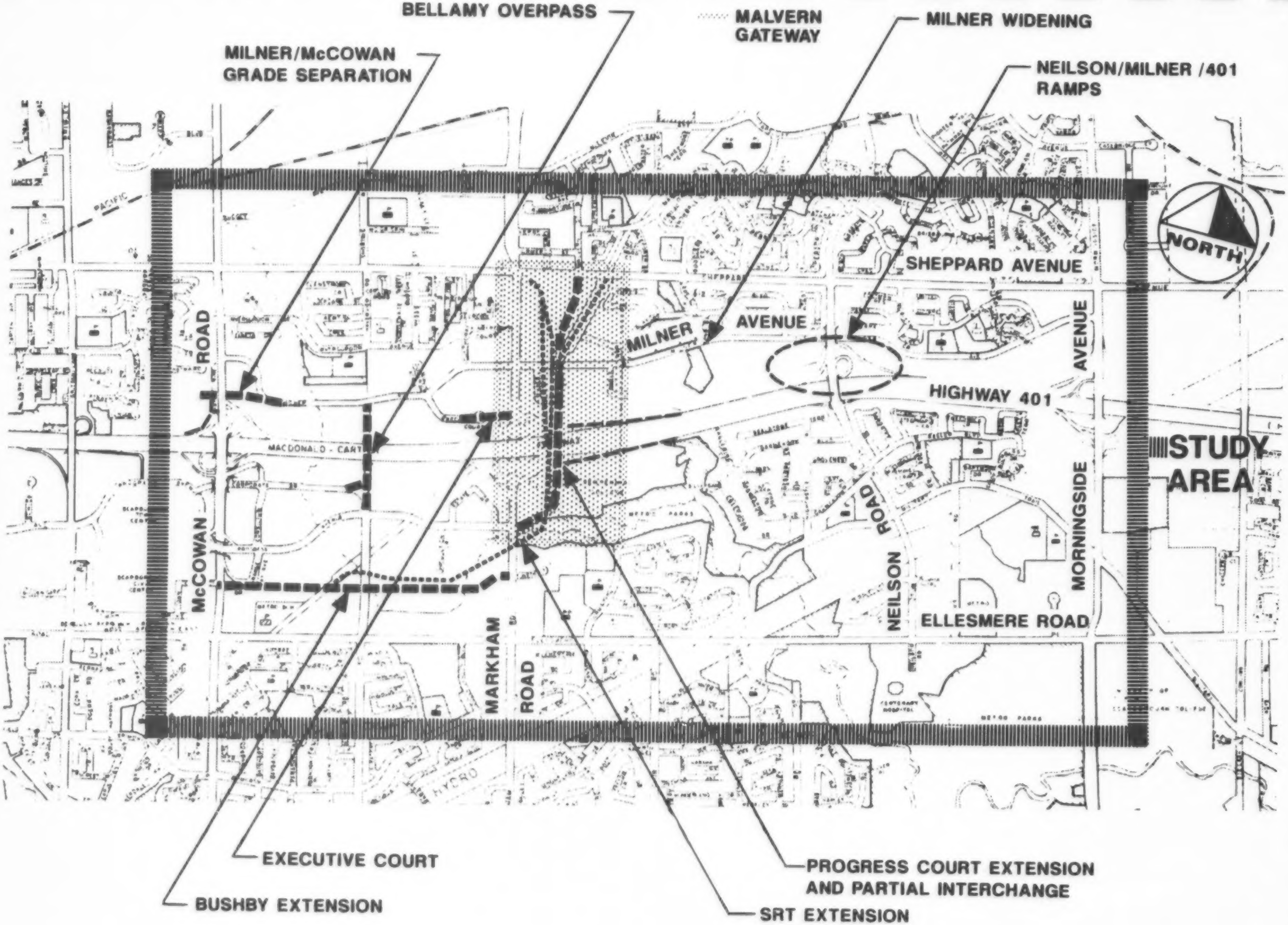
All of the recommended additions are shown as the ultimate network in Exhibit 18. This network was assumed in the travel demand analysis discussed in Section 4.2. The maximum flexibility is provided if the recommended transportation improvements are protected for future implementation.

Highway 401 is very important to the study area due to:

1) the capacity that it provides for either through or destined traffic; and
2) the access that it provides since it bisects the study area.

Apart from Highway 401, the next two most critical roadway links providing service to the study area are McCowan Road and Markham Road (Highway 48), both of which are under the jurisdiction of Metropolitan Toronto. Both McCowan Road and Markham Road are the potential "Achilles heels" of the arterial roadway system within the study area at the present time for the following reasons:

1) They are major continuous arterials within the Metro roadway system and consequently handle large through traffic volumes;



POSSIBLE ADDITIONS TO THE TRANSPORTATION NETWORK

Exhibit 18

2) they provide the main access points to Highway 401 within the study area; and
3) they act as the key access to the study area from the north and south as well as from Highway 401.

Four of the roadway improvements that were considered would offer additional access to the study area while tempering the critical nature of the McCowan Road and Markham Road crossings of Highway 401 and would also reduce the dependence of the study area and City Centre traffic on the Metropolitan arterial grid systems. The four improvements are:

- Milner/McCowan Grade Separation
- Executive Court Extension
- Progress Court Extension and Partial Interchange
- Bellamy Road Overpass

The three remaining additions (Neilson/Milner/Highway 401 ramps, widening of Milner Avenue and Bushby Drive Extension) were considered for site-specific reasons which are discussed in the relevant section.

In the following sub-sections, each addition is discussed on its own in terms of the rationale for considering it, the alternatives that were developed, the public review, the Technical Advisory Committee's recommendation and the assessment of the recommended alternative.

The preliminary assessment included a review of the results of the model run for each addition in order to determine effects on other links within the network. It should be noted, however, that the link runs were based on 'blanket' levels of development and assumptions regarding transit modal split. Therefore the results of the model runs have been interpreted in a general, not specific, sense. In order to assess the effects of the new links in terms of jobs and assessment the following was assumed:

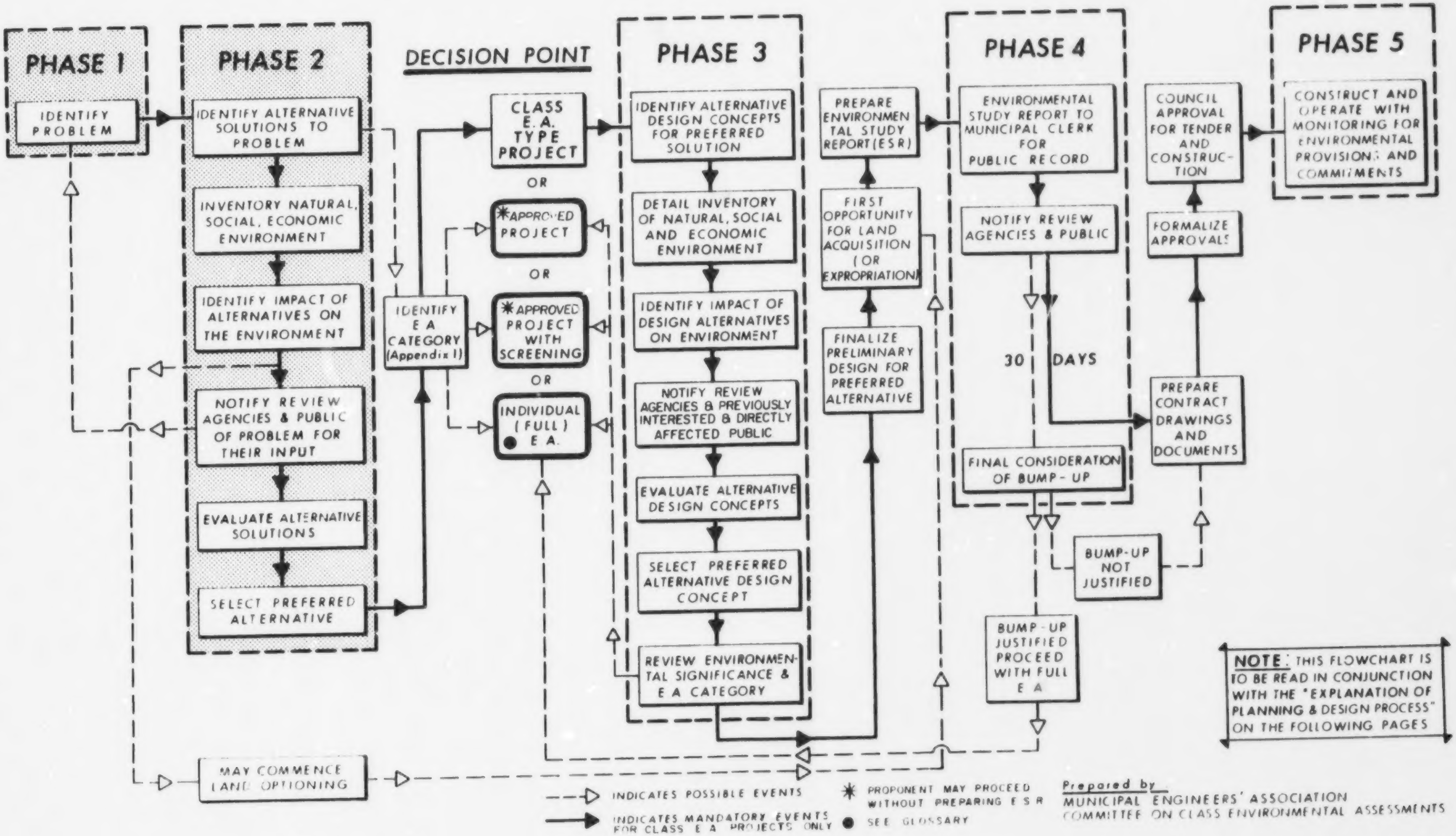
- new roadway provides capacity for 'X' vehicles in the peak hour
- 'X' vehicles = 'Y' employees (based on the trip generation rates provided in Section 4.2.2).
- 'Y' employees = 'Z' annual tax revenue where 1 employee -> $1,700 in annual tax revenue (based on information provided by the City of Scarborough, see Appendix G).

The purpose of this analysis, however, is to provide a general indication of the benefits and should not be applied specifically.

The preliminary cost estimates are "order of magnitude" for capital costs only and do not include property costs.

It is important to note that any improvements which incorporate modifications to Highway 401 are conceptual and subject to detailed investigations/approval by the Ministry of Transportation. As well, the proposed additions to the roadway network will require the necessary approvals under the Planning Act and/or the Environmental Assessment Act to allow their protection and construction. To this end, however, the City of Scarborough is of the opinion that the level of investigation undertaken by this study meets the requirements of Phase 2 of the Class Environmental Assessment for Municipal Roadway Projects (Class EA). The Class EA was approved on April 9, 1987. It provides an approved process under the Environmental Assessment Act for municipal staff in the planning, design and construction of municipal road projects, to ensure that the requirements of the Environmental Assessment Act are followed. As shown in Exhibit 19, Phase 1 is the identification of the problem. In this study the problem was identified as being the need to identify additions to the transportation network for future protection in order to accommodate future increases in demand due to increased background traffic and/or potential levels of development/redevelopment.

PLANNING & DESIGN PROCESS FOR CLASS E.A. TYPE MUNICIPAL ROADS PROJECTS


PHASE 1
IDENTIFY PROBLEM
PHASE 2
IDENTIFY ALTERNATIVE SOLUTIONS TO PROBLEM
INVENTORY NATURAL, SOCIAL, ECONOMIC ENVIRONMENT
IDENTIFY IMPACT OF ALTERNATIVES ON THE ENVIRONMENT
NOTIFY REVIEW AGENCIES & PUBLIC OF PROBLEM FOR THEIR INPUT
EVALUATE ALTERNATIVE SOLUTIONS
SELECT PREFERRED ALTERNATIVE
DECISION POINT
IDENTIFY E A CATEGORY (Appendix I)
CLASS E.A. TYPE PROJECT
OR
*APPROVED PROJECT
OR
*APPROVED PROJECT WITH SCREENING
OR
INDIVIDUAL (FULL) ● E.A.
PHASE 3
IDENTIFY ALTERNATIVE DESIGN CONCEPTS FOR PREFERRED SOLUTION
DETAIL INVENTORY OF NATURAL, SOCIAL AND ECONOMIC ENVIRONMENT
IDENTIFY IMPACT OF DESIGN ALTERNATIVES ON ENVIRONMENT
NOTIFY REVIEW AGENCIES & PREVIOUSLY INTERESTED & DIRECTLY AFFECTED PUBLIC
EVALUATE ALTERNATIVE DESIGN CONCEPTS
SELECT PREFERRED ALTERNATIVE DESIGN CONCEPT
REVIEW ENVIRONMENTAL SIGNIFICANCE & E A CATEGORY
FINALIZE PRELIMINARY DESIGN FOR PREFERRED ALTERNATIVE
FIRST OPPORTUNITY FOR LAND ACQUISITION (OR EXPROPRIATION)
PREPARE ENVIRONMENTAL STUDY REPORT (ESR)
PHASE 4
ENVIRONMENTAL STUDY REPORT TO MUNICIPAL CLERK FOR PUBLIC RECORD
NOTIFY REVIEW AGENCIES & PUBLIC
30 DAYS
FINAL CONSIDERATION OF BUMP-UP
BUMP-UP NOT JUSTIFIED
BUMP-UP JUSTIFIED PROCEED WITH FULL E A
PREPARE CONTRACT DRAWINGS AND DOCUMENTS
FORMALIZE APPROVALS
COUNCIL APPROVAL FOR TENDER AND CONSTRUCTION
PHASE 5
CONSTRUCT AND OPERATE WITH MONITORING FOR ENVIRONMENTAL PROVISIONS AND COMMITMENTS
MAY COMMENCE LAND OPTIONING
INDICATES POSSIBLE EVENTS
INDICATES MANDATORY EVENTS FOR CLASS E A PROJECTS ONLY
* PROPONENT MAY PROCEED WITHOUT PREPARING E S R
● SEE GLOSSARY

NOTE: THIS FLOWCHART IS TO BE READ IN CONJUNCTION WITH THE "EXPLANATION OF PLANNING & DESIGN PROCESS" ON THE FOLLOWING PAGES

Prepared by
MUNICIPAL ENGINEERS' ASSOCIATION
COMMITTEE ON CLASS ENVIRONMENTAL ASSESSMENTS

Exhibit 19

Phase 2 involves the identification of alternative solutions and the subsequent analysis and evaluation culminating in the identification of a preferred solution. In this study, the preferred solution (as identified by the Technical Advisory Committee and reviewed with the public) is the protection of the identified ultimate roadway network.

4.3.2.1 Highway 401 Collectors

Currently the core-collector system for Highway 401 terminates between Markham Road and Neilson Road. In 1989 the Province of Ontario carried out sod turning ceremonies for the extension of the collector lanes easterly. The provision of the associated additional capacity on Highway 401 will ensure that through traffic continues to use the provincial highway system rather than divert onto the municipal system within the study area.

Since the extension of the collector lanes is being pursued, they were assumed to be part of the existing transportation network.

4.3.2.2 Milner/McCowan Grade Separation

Background

The only access into the west section of the Milner Avenue corridor is provided at the signalized intersection at Milner Avenue and McCowan Road. Therefore the operation of this intersection becomes the constraint when considering increased traffic demand. With the consideration of substantial additional development as part of the Great Wall proposal in the vicinity of Milner Avenue and McCowan Road, prior to this study possible modifications in this area were identified to relieve McCowan Road and the McCowan/Milner intersection. These concepts were used as a basis for developing the alternatives considered during this study.

Alternatives

Six alternatives were developed as shown schematically on Exhibit 20 and subsequently reviewed with the Ministry of Transportation and the public.

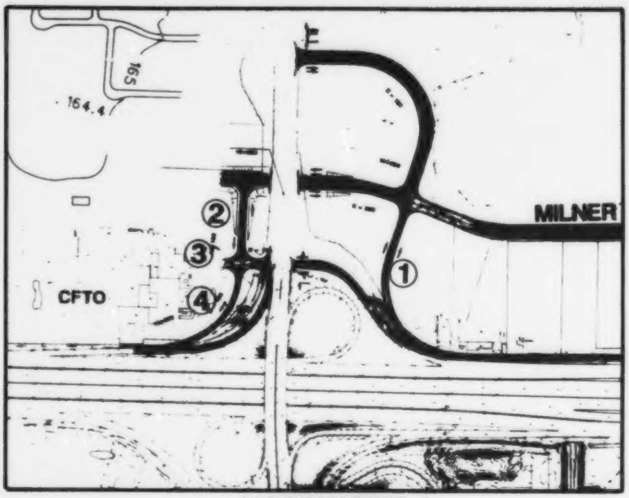
- alternative 1 - preferred
- alternative 6 - developed as part of Great Wall development application
- alternatives 2, 3 and 4 offer similar moves as alternative 6 but different road configurations west of McCowan Road (depending on redevelopment of CFTO lands)
- alternative 5 - relocation of ramps in north-east quadrant of McCowan/401 interchange in order to enable Milner Avenue to intersect McCowan Road at the interchange ramps.

At the outset, Alternative 1 was identified as being preferred since it offers the most flexibility due to the direct exit ramp from westbound Highway 401 to Milner Avenue.

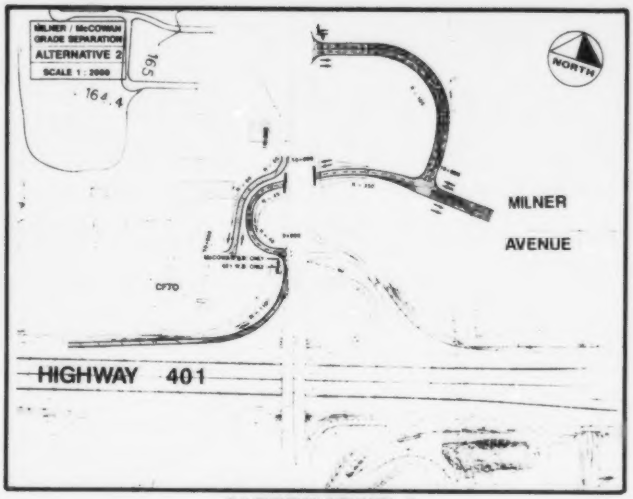
Public Review

The travel demand analysis has not shown any direct effects on residential areas with this proposal. During all phases of the public review community concerns were not raised regarding this proposal. Owners of the Great Wall property have indicated their concerns with the new exit ramp which bisects their property.

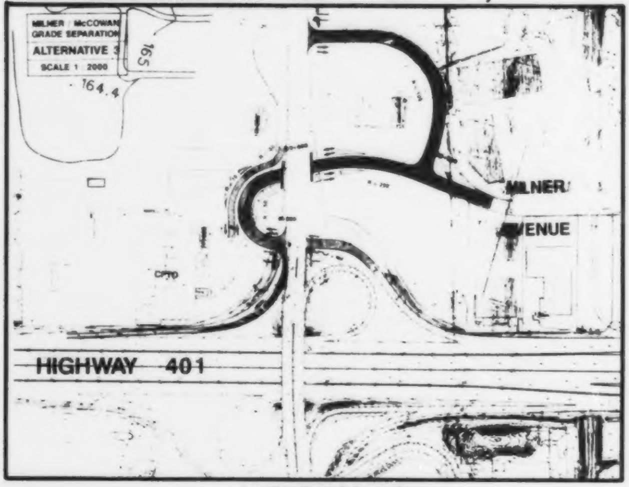
Regarding Alternative 1, the Ministry of Transportation has indicated that they do not support the provision of the new exit ramp (shown as (1) on Exhibit 20) since it requires a "split" exit ramp. As well, the additional movement will be a



ALTERNATIVE 1
(IDENTIFIED AS BEING PREFERRED WITH PUBLIC,
FOR RECOMMENDED SEE EXHIBIT 21)



ALTERNATIVE 2
(NOT RECOMMENDED)



ALTERNATIVE 3
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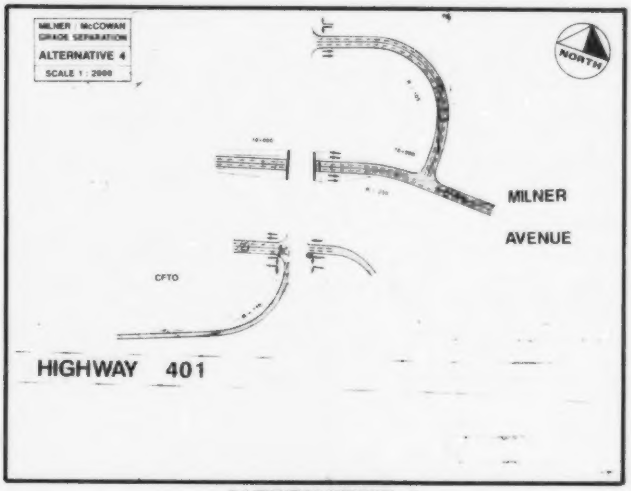
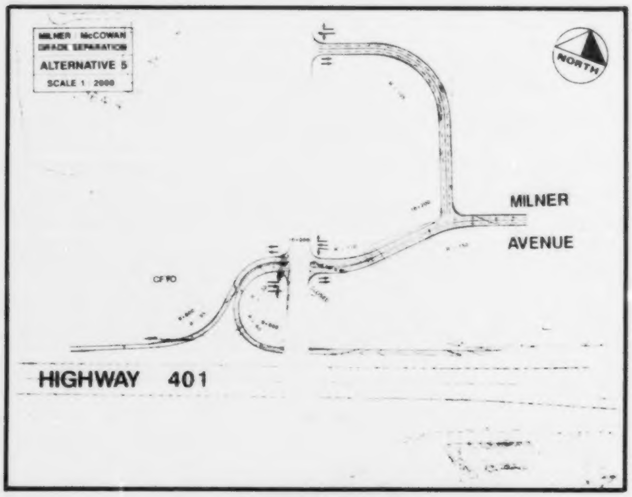
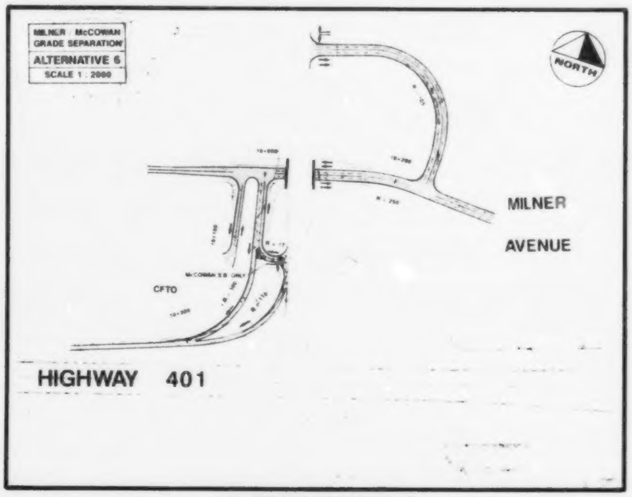


ALTERNATIVE 4
(NOT RECOMMENDED)



ALTERNATIVE 5
(NOT RECOMMENDED)



ALTERNATIVE 6
(NOT RECOMMENDED)

MILNER / McCOWAN GRADE SEPARATION

Exhibit 20

duplicate movement therefore potentially causing additional driver confusion. The Ministry also advised that the movement from Highway 401 to Milner Avenue should be free-flow. ((2) on Exhibit 20). Further to this, they advised that the entrance to CFTO should be relocated so as not to constrain the operation of the intersection at McCowan Road and the exit ramp from Highway 401 ((3) on Exhibit 20). In addition, the Ministry noted their concerns about the provision of two entrance ramps to Highway 401 ((4) on Exhibit 20).

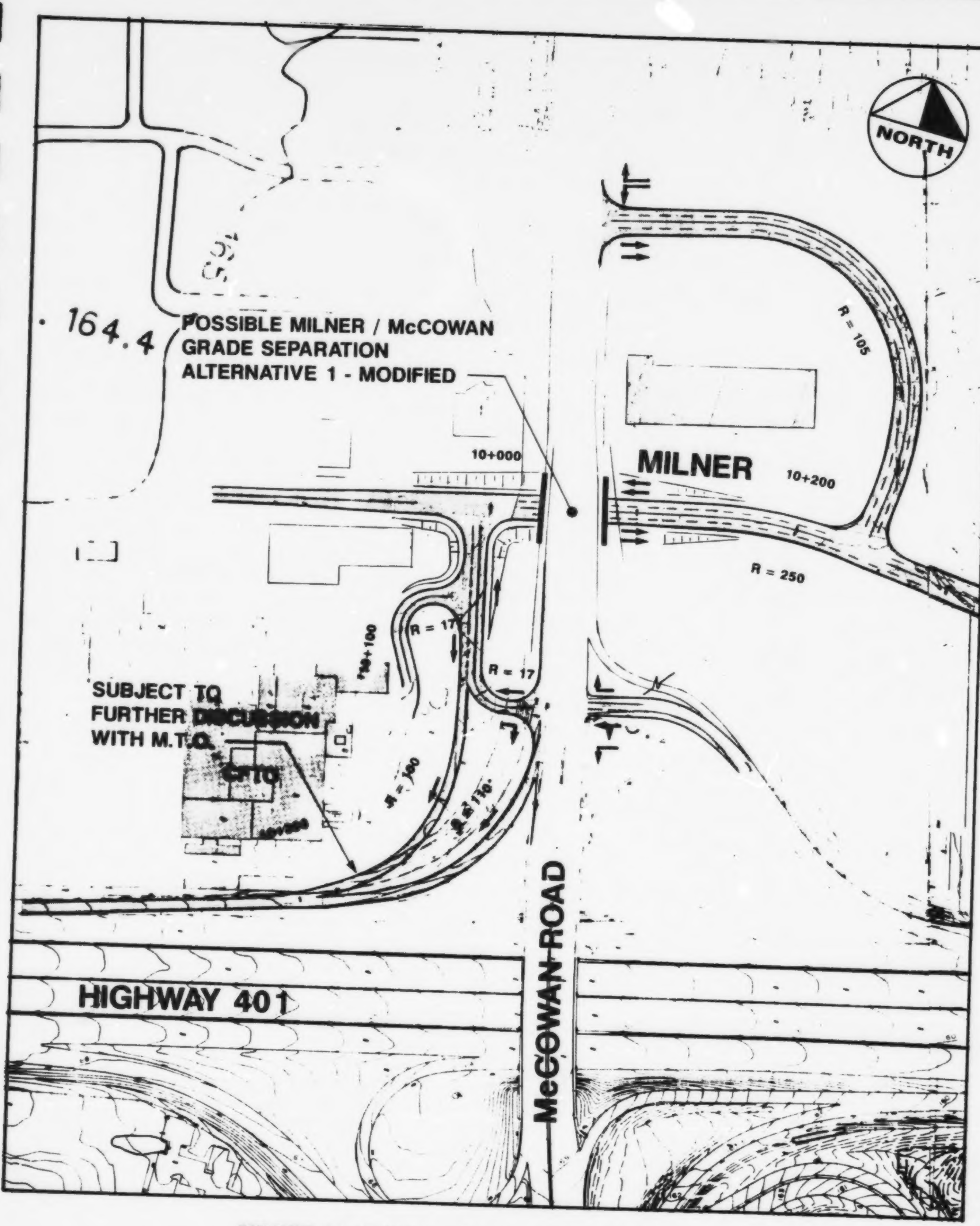
Conclusion

Based on the comments from the Ministry of Transportation and further to the public review, the Technical Advisory Committee concluded that the direct ramp from Highway 401 to Milner Avenue should be deleted and the entrance to CFTO should be relocated. Relocating the entrance to CFTO in turn provides for a free-flow movement to Milner Avenue. Regarding the two entrance ramps to Highway 401, it was concluded that both are required. Therefore, both ramps have been shown but are subject to further review by the Ministry of Transportation. Therefore Alternative 1 - Modified was developed and identified as being preferred. It is shown in Exhibit 21.

Assessment

The following benefits/advantages have been identified for the Milner/McCowan grade separation:

- provides relief to McCowan Road and Markham Road
- provides relief to Milner/McCowan intersection
- provides direct access from Highway 401 to the Milner Avenue Corridor



MILNER/McCOWAN GRADE SEPARATION :
ALTERNATIVE 1 - MODIFIED

Exhibit 21

- provides capacity for 1,400 cars in the peak direction. This in turn could generate approximately 4,700 office jobs which can be translated into $8 million in annual tax revenue.

The preliminary capital cost estimate is $5 million.

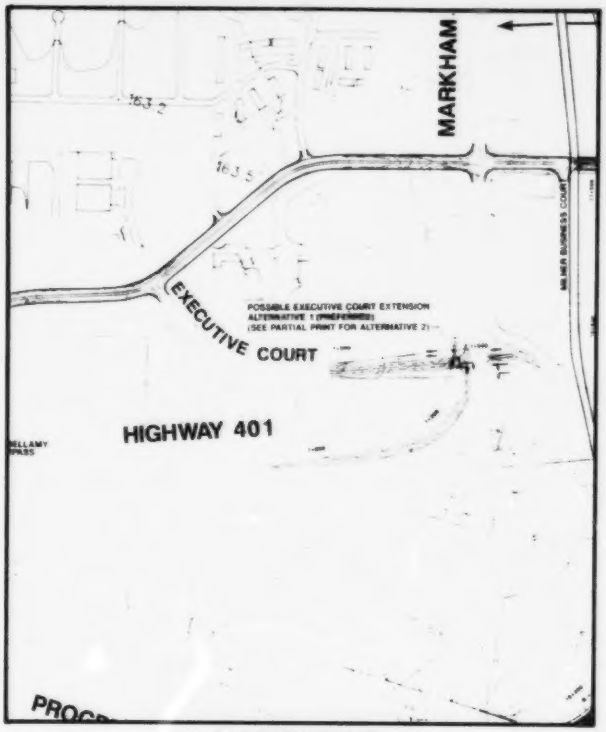
4.3.2.3 Executive Court Extension

In order to provide increased access to the Milner Avenue corridor and to provide relief to the intersection of Milner Avenue and Markham Road, the opportunity to extend Executive Court easterly to intersect with Markham Road was considered.

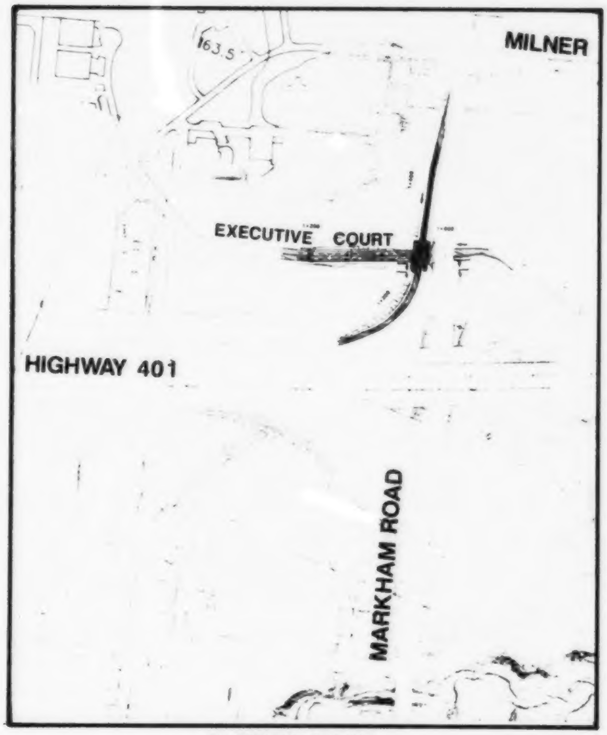
Alternatives

Two alternatives were developed as shown in Exhibit 22. Each provides for a four lane Executive Court Extension intersecting with Markham Road at the exit ramp from Highway 401 to the east. The difference between Alternatives 1 and 2 is the manner in which the ramp from southbound Markham Road to westbound Highway 401 is provided. With Alternative 1 the movement is forced through the intersection while with Alternative 2 the movement starts further north and so the ramp is grade-separated from the intersection. Therefore, Alternative 2 does not provide for the movement from eastbound Executive Court to westbound Highway 401.

The Technical Advisory Committee identified Alternative 1 as being preferred since it offers the most flexibility at less cost. At this preliminary level of analysis it was felt that the 'perched' nature of the grade-separated ramp required with Alternative 2 would not only result in additional costs but could be "aesthetically imposing".


MARKHAM
163.2
163.5
MILNER BUSINESS COURT
EXECUTIVE COURT
POSSIBLE EXECUTIVE COURT EXTENSION
ALTERNATIVE 1 (PREFERRED)
(SEE PARTIAL PRINT FOR ALTERNATIVE 2)
HIGHWAY 401
BELLAMY PASS
PROGR

ALTERNATIVE 1



ALTERNATIVE 2

EXECUTIVE COURT EXTENSION

Exhibit 22

Public Review

The travel demand analysis has not shown any direct effects on residential areas with this proposal. During all phases of the public review, community concerns were not raised regarding this proposal. The owner of the property located south of Executive Court and west of Markham Road has indicated his preference for Alternative 2 noting that, in his opinion, the elevated ramp can be made to work with possible high density development in the area. The owner of the property located south of Executive Court has identified a concern regarding future access into the property.

The Ministry of Transportation has advised that they agree in principle to Alternative 1 subject to the following moves not being provided: northbound left turn from McCowan Road to Executive Court; left turn exit from Executive Court and double right from Executive Court. They also agree in principle to Alternative 2.

Conclusion

Based on the comments from the Ministry of Transportation and the public review, the Executive Court Extension is recommended, however further analysis of both alternatives will be required during future detailed studies.

Assessment

The following benefits/advantages have been identified for the Executive Court Extension:

- provides direct access from Highway 401 to Milner Corridor
- provides relief to Markham Road and McCowan Road
- provides relief to Markham/Milner and McCowan/Milner intersections

- provides capacity for 1,400 cars in the peak direction. This in turn could generate approximately 4,700 office jobs which can be translated into $8 million in annual tax revenue.

The preliminary capital cost estimate for Alternative 1 is $1 million and for Alternative 2 is $ 2.2 million.

4.3.2.4 Progress Court Extension and Partial Interchange

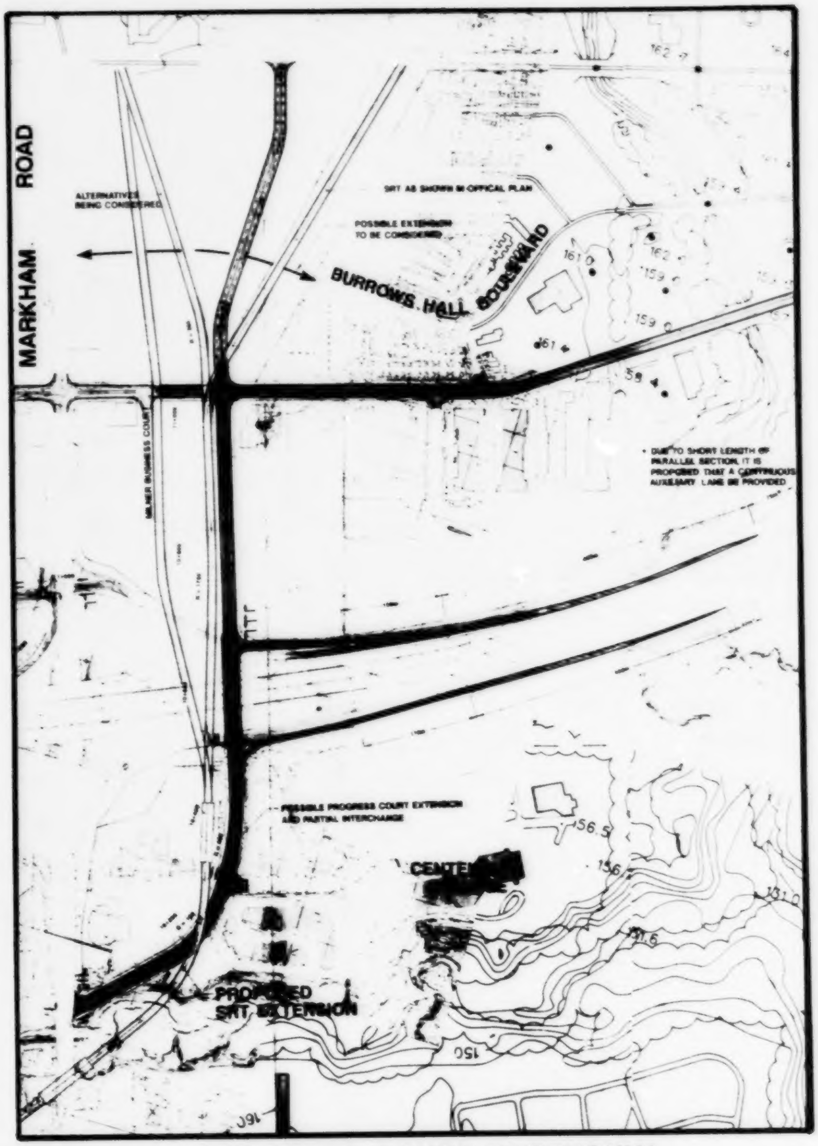
Background

The Progress Court Extension from south of Highway 401 to Sheppard Avenue with ramps to and from Highway 401 to the east was identified previously by the City of Scarborough as a means providing relief to Markham Road. In 1986 the Ministry of Transportation advised the City that:

> "the intent of the concept has some merit and we accept the principle that it is feasible and property protection by the City of Scarborough, for this access option should be exercised. Approval of the proposal by the Ministry would be subject to a thorough review prior to implementation to determine the impacts on Highway 401".

Alternatives

During the course of the present study the alignment was developed at a scale of 1:500 to confirm its location. This work, however, was not carried out at the level of detail required for a full preliminary design study. Two alternatives were developed for the exit ramps; namely a double exit versus a single exit with split ramps. Through discussions with staff of the Ministry of Transportation only one alternative (as shown in Exhibit 23) was carried forward and reviewed with the public. During future, more detailed studies however, alternative configurations may be considered.


MARKHAM ROAD
ALTERNATIVES BEING CONSIDERED
SRT AS SHOWN IN OFFICAL PLAN
POSSIBLE EXTENSION TO BE CONSIDERED
BURROWS HALL BOULEVARD
MILNER BUSINESS COURT
DUE TO SHORT LENGTH OF PARALLEL SECTION, IT IS PROPOSED THAT A CONTINUOUS AUXILIARY LANE BE PROVIDED
POSSIBLE PROGRESS COURT EXTENSION AND PARTIAL INTERCHANGE
CENTE
PROPOSED SRT EXTENSION
162.7
162.0
161.0
159.0
161
158
156.5
156
151.0
151.6
150
160

PROGRESS COURT EXTENSION

Exhibit 23

Public Review

During the public review, general support was identified for the proposal. Notwithstanding this some members of the community expressed their concern about Progress Court Extension intersecting with Sheppard Avenue at Malvern Street. Other than local access there would appear to be no justification for the increased use of Malvern Street. Nevertheless, should operational problems occur, the City of Scarborough would consider legal and/or physical restrictions to prohibit the movement of traffic between Progress Court and Malvern Street.

Due to operational concerns (eg. weaving lengths), the Ministry of Transportation has advised that a more detailed analysis will have to be carried out before they can approve the ramps to and from Highway 401.

Conclusion

Based on the public review and assessment, the Progress Court Extension and Partial Interchange is recommended for inclusion in the ultimate roadway network.

Assessment

The following benefits/advantages have been identified for the Progress Court Extension:

- provides access to the Milner Avenue corridor, City Centre and Centennial College
- provides access from Highway 401 to the Malvern Gateway
- provides relief to Markham Road
- provides relief to Markham/Progress, Markham/Milner and Markham/Sheppard intersections

- City street independent of demands of through traffic
- provides capacity for 2,600 cars (i.e. 1,300 cars in each direction during the peak hour). This in turn could generate approximately 8,500 office jobs which can be translated into $15 million in annual tax revenue.

The preliminary capital cost estimate is $12 million.

4.3.2.5 Bellamy Road Overpass

Background

The Bellamy Road overpass from south of Highway 401 to Milner Avenue has been identified previously for consideration. It was identified again during this study as a means of providing local access between the areas to the north and south of Highway 401.

Alternatives

Only one alternative was developed which involved extending Bellamy Road as a four lane facility over Highway 401 to intersect with, and terminate at, Milner Avenue. Ramps to and from Highway 401 were not considered due to the proximity to the interchanges at McCowan Road and Markham Road.

Public Review

Prior to this study, strong community opposition had been identified. During the course of the present study there was some opposition, however, it was not as strong as was anticipated. This could be due to the fact that the study was addressing the possible modifications in a general sense.

Members of the community have expressed concern that Bellamy Road could be extended north of Milner Avenue to Invergordon Avenue in the residential area. The travel demand analysis has shown that the extension of Bellamy Road north of Milner Avenue is not required to accommodate potential levels of development along Milner Avenue. The land north of Milner Avenue has been sold and a house is being constructed, effectively blocking an extension.

Another concern expressed by members of the community is that a full or partial interchange could be constructed at Highway 401. As noted earlier, the Ministry of Transportation would not consider any additional ramps due to the proximity to the McCowan Road and Markham Road interchanges.

Members of the community have also expressed concern that traffic volumes on Bellamy Road will increase south of Ellesmere Road. Bellamy Road has a theoretical capacity of 1,800 vehicles, one way, in an hour. Currently it is operating at approximately 1,300 vehicles (northbound) in the a.m. peak hour. The travel demand analysis predicts an increase of 85 cars south of Ellesmere Road (approximately 6.5% over and above the natural increase that would occur even without the overpass). This was considered to be a low level of increase by the Technical Advisory Committee.

Conclusion

Based on the public comments and the assessment, the Bellamy Road Overpass is recommended for inclusion in the ultimate roadway network.

Assessment

The following benefits/advantages have been identified for the Bellamy Road overpass:

- provides access to the City Centre
- provides relief to McCowan Road and Markham Road

- improves access to Milner Corridor
- will operate as a balancing link between Milner Avenue and Progress Avenue
- provides opportunity for pedestrian link/bikeway across Highway 401
- City street therefore independent of through traffic demands
- provides capacity for 1,300 cars in the peak direction. This in turn could generate approximately 4,300 office jobs which can be translated into $7.3 million in annual tax revenue.

The preliminary capital cost estimate is $7.3 million.

4.3.2.6 Consilium Overpass

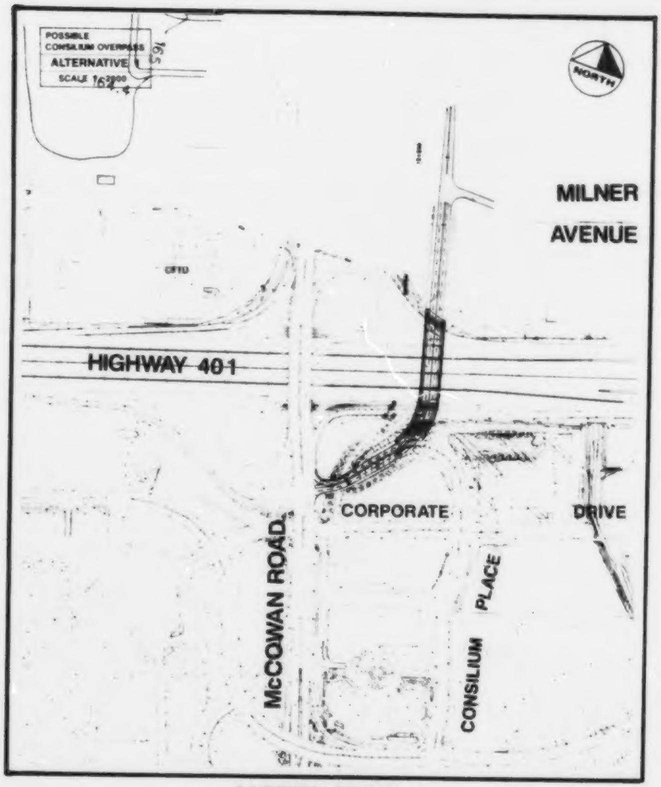
Background

As an alternative to Bellamy Road and in order to provide additional access to the Milner Avenue corridor the possibility of extending Consilium Place northerly over Highway 401 to intersect with Milner Avenue was considered.

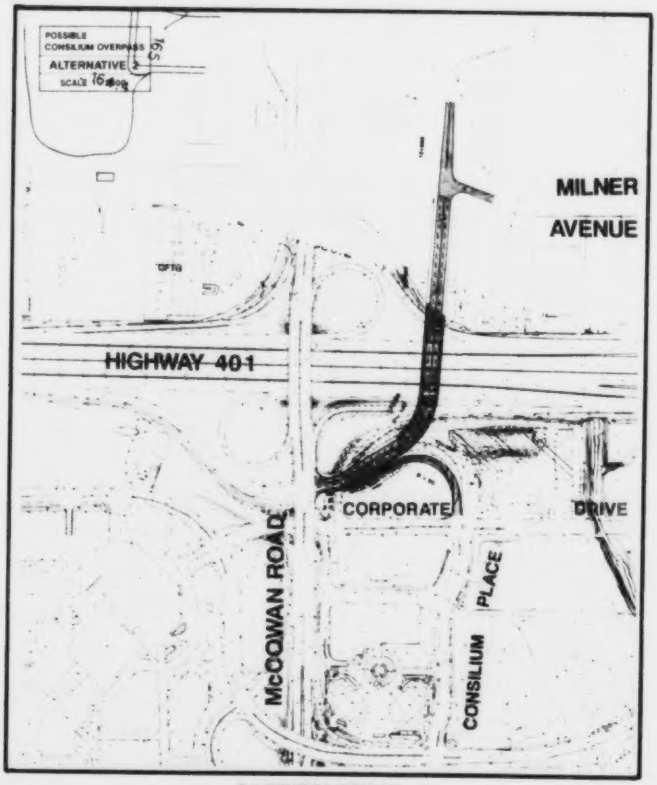
Alternatives

The possibility of extending Consilium Place directly north from its intersection with Corporate Drive was considered but not pursued for the following reason. The grade required in order for Consilium Place to clear Highway 401 as well as accommodate the approach to the Consilium Place/Corporate Drive intersection would require that the grade of the latter be elevated significantly. This in turn would have serious effects on local access. As well a proposal for condominium development to the east of Consilium Place has received site plan approval and would be affected by that proposal.

Therefore two alternatives were developed as shown in Exhibit 24. Each provides for the four lane extension of Consilium Place over Highway 401 into existing Milner Avenue. South of Highway 401 the new roadway would



ALTERNATIVE 1



ALTERNATIVE 2

CONSILIUM OVERPASS
(NOT RECOMMENDED)

Exhibit 24

intersect with McCowan Road. Due however to the grade constraints, it would not intersect with Corporate Drive. Alternative 2 was developed to provide an eastbound-only movement from McCowan Road to Corporate Drive.

Conclusion

The advantages of the Consilium Overpass were identified as being additional access to the Milner Avenue corridor and increased access between the areas located north and south of Highway 401. The disadvantages were identified as being increased pressure on McCowan Road and loss of the existing Corporate Drive/Consilium Place connection to McCowan Road and the interchange at Highway 401. Therefore it was concluded that the disadvantages outweighed the advantages and so the Technical Advisory Committee did not recommend the Consilium Overpass for further consideration.

4.3.2.7 Bushby Drive Extension

Background

Within the Progress Industrial District, Progress Avenue is the main east-west link.

In order to provide relief to Progress Avenue and to provide improved local access to enable the redevelopment of the lands located south of the watercourse, an east-west link midway between Progress Avenue and Ellesmere Road has been identified as shown on Exhibit 18.

Alternatives

No alternatives have been developed. Instead, a link has been shown conceptually which would extend Bushby Drive easterly to intersect with

Markham Road at Tuxedo Court. Further studies will be required to determine the location of the roadway and will have to consider its relationship to the SRT Extension and possible yard extension, crossing of the creek and property effects.

Public Review

During the public review community concerns were not raised regarding this proposal.

Conclusion

Based on the public review and the assessment, the Bushby Drive Extension is recommended for inclusion in the ultimate roadway network.

Assessment

The following benefits/advantages have been identified for the Bushby Drive Extension:

- provides local access and enables redevelopment of adjacent lands
- provides relief to Progress Avenue and Ellesmere Road
- provides relief to Progress / Markham intersection
- provides relief to Ellesmere / Markham intersection

In terms of capital costs, the preliminary estimate of the roadway cost only is $2 million for the section from McCowan Road to Bellamy Road and $2 million from Bellamy Road to Markham Road. The costs associated with the relationship of roadway to the SRT Extension, the crossing of the creek and any associated property effects can not be determined until further studies are carried out.

The modelling work has not identified any direct effects on residential areas with this proposal.

4.3.2.8 Widening of Milner Avenue

Currently Milner Avenue operates as a two lane roadway. Milner Avenue is the 'spine' of the industrial area north of Highway 401 and so is the critical east-west link within the industrial area. As development or redevelopment occurs, the widening of Milner Avenue (up to six lanes in some locations) will be required. Most likely, staging options (eg. four or five lanes) will be considered. The number of lanes, timing and staging will be dependent on the type, density and location of development.

The existing basic right-of-way for Milner Avenue is 26 metres. Although the widening of Milner Avenue appears to be a long term initiative, as development proceeds it is desirable to protect for a 36 metre right-of-way. Due to the long term nature of the widening, capital costs have not been identified. During the public review, no public comment was received. Residents of adjacent residential areas (east of Milner Business Court) will be consulted in the development of the widening plans and proposed staging.

4.3.2.9 Neilson/Milner/Highway 401 Ramps

Background

There is an interchange at Neilson Road and Highway 401 however Milner Avenue is grade-separated at Neilson Road and does not have access to Highway 401 at this point. Therefore this part of Milner Avenue can only be accessed from Highway 401 at Morningside Drive or Markham Road. In order to provide additional access to the Milner Corridor and, if possible, a connection between Milner Avenue and Neilson Road, alternatives were developed.

Alternatives

Four alternatives were developed as shown on Exhibit 25. A variation of Alternative 4 was identified previously in the Milner Avenue Transportation Study Report (1982). Due to the undesirable weaving caused by providing access points along the exit ramp, this alternative was identified as not being feasible. This alternative was modified, however, to become Alternative 1 by separating the exit and entrance ramps. Alternative 1 would not provide for the connection between Milner Avenue and Neilson Road.

Alternatives 2 and 3 provide for access between Highway 401 and Milner Avenue by providing a four lane connection from the ramp intersection to Milner Avenue. Alternative 2 is preferred since it offers the most flexibility for the development of adjacent lands.

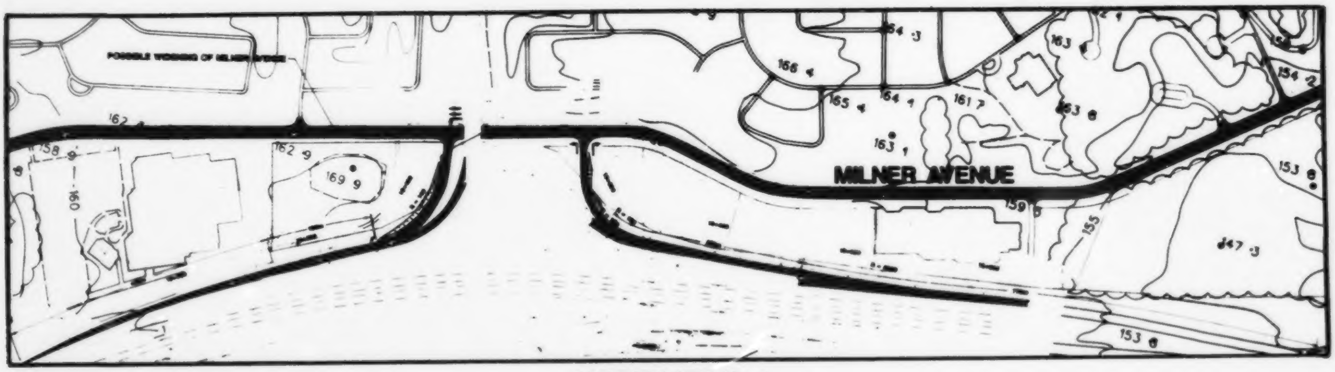
Alternatives 1 and 2 were identified to the public and the Ministry of Transportation as being the preferred alternatives.

Public Review

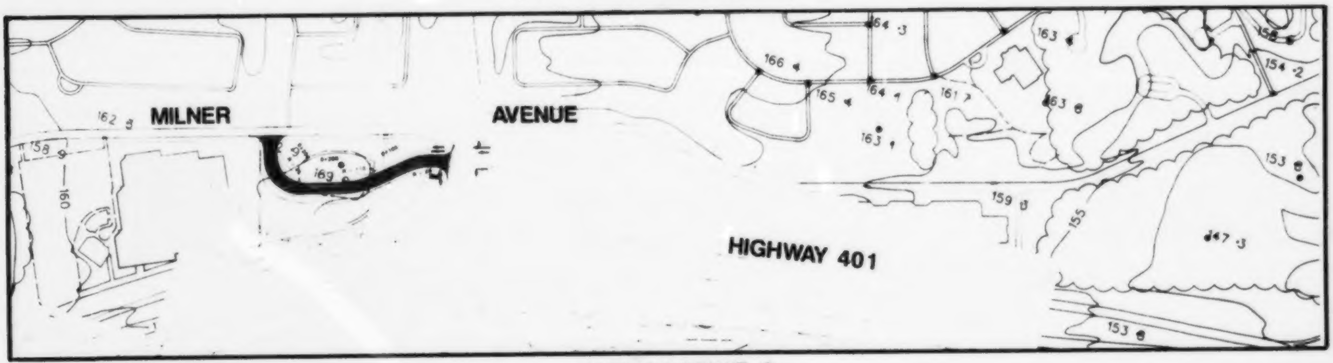
During the public review there was a limited expression of community concern from those living north of Milner Avenue. At that time, residents were advised that Alternative 2 can be developed to intersect at, or be offset from, Burrows Hall Boulevard.

Concerns were expressed by residents in the Military Trail area that traffic volumes would increase on Neilson Road and hence on Military Trail.

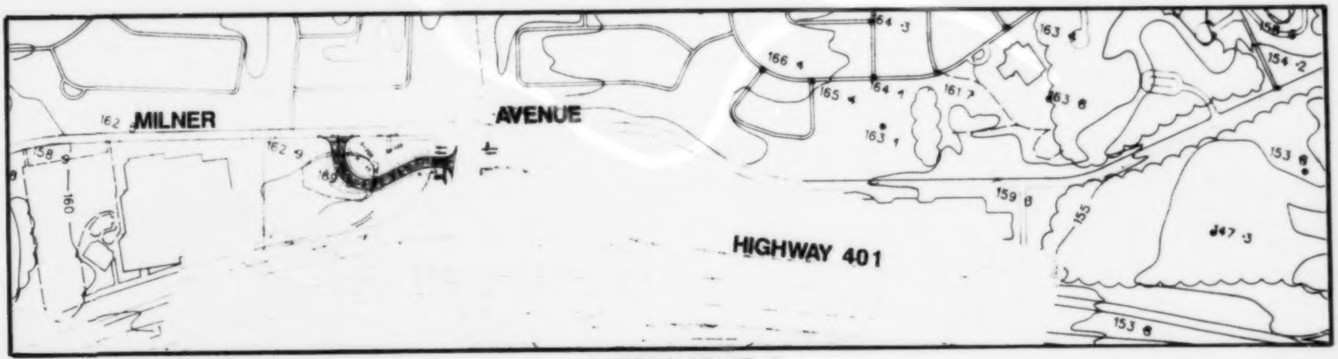
A site plan application has been submitted for the property west of Neilson Road and south of Milner Avenue to develop the property in accordance with the current zoning permission. The application does not include provision for either Alternatives 1 or 2.



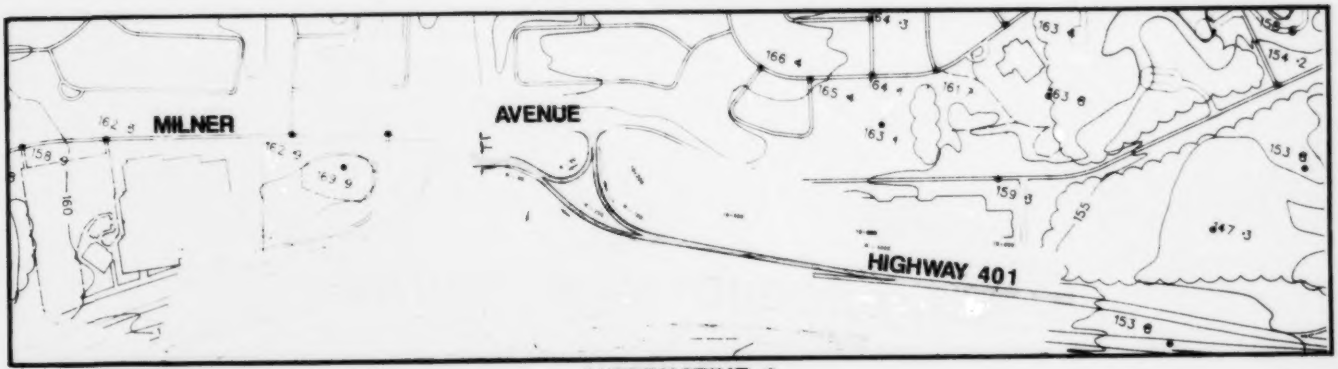
ALTERNATIVE 1
(NOT RECOMMENDED)



ALTERNATIVE 2
(RECOMMENDED)



ALTERNATIVE 3
(NOT RECOMMENDED)



ALTERNATIVE 4
(NOT FEASIBLE)

NEILSON / MILNER / HIGHWAY 401 RAMPS

Exhibit 25

The Ministry of Transportation has indicated that they do not support Alternative 1 due to the split exit ramps and double entrance ramps. The Ministry has advised, however, that they agree in principle to Alternative 2 subject to the following moves not being provided: northbound left turn from Neilson Road to new roadway, left turn exit from new roadway and double right from the new roadway.

Conclusion

Based on the public review and further to the comments provided by the Ministry of Transportation, the Technical Advisory Committee concluded that Alternative 2 was preferred. In light of the current site plan application, however, it is recommended that should the site redevelop in the future, then Alternative 2 should be protected for in conjunction with higher density development.

Assessment

The following benefits/advantages were identified for the Neilson/Milner/ Highway 401 ramps (Alternative 2):

- provides access from Highway 401 to Milner Avenue corridor
- provides access between Neilson Road and Milner Avenue
- improves access for area residents
- provides capacity for 1,400 cars in the peak direction. This in turn could generate approximately 4,700 office jobs which can be translated into $8 million in annual tax revenue.

The preliminary capital cost estimate is $1 million.

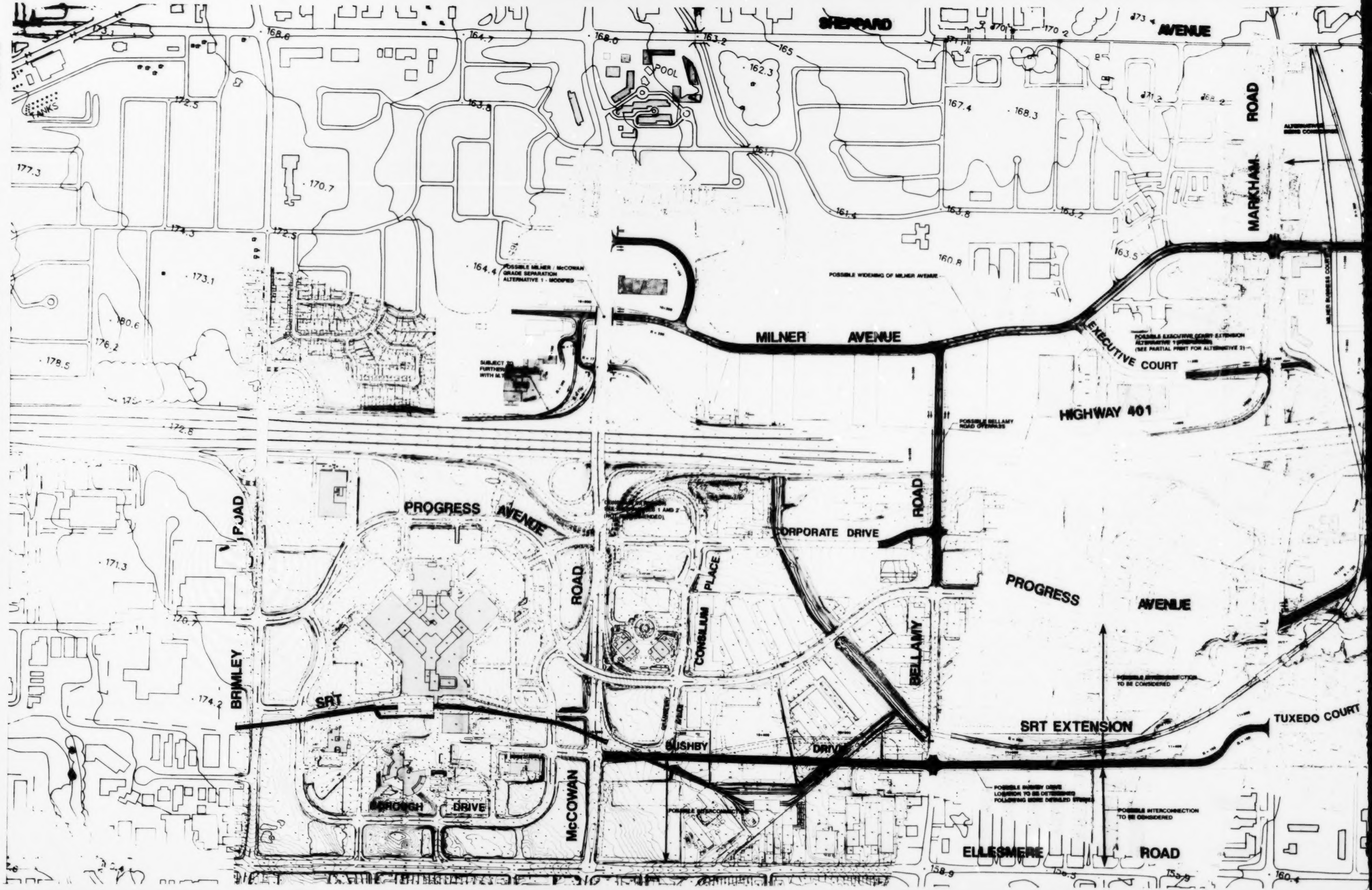
4.3.3 Ultimate Transportation Network

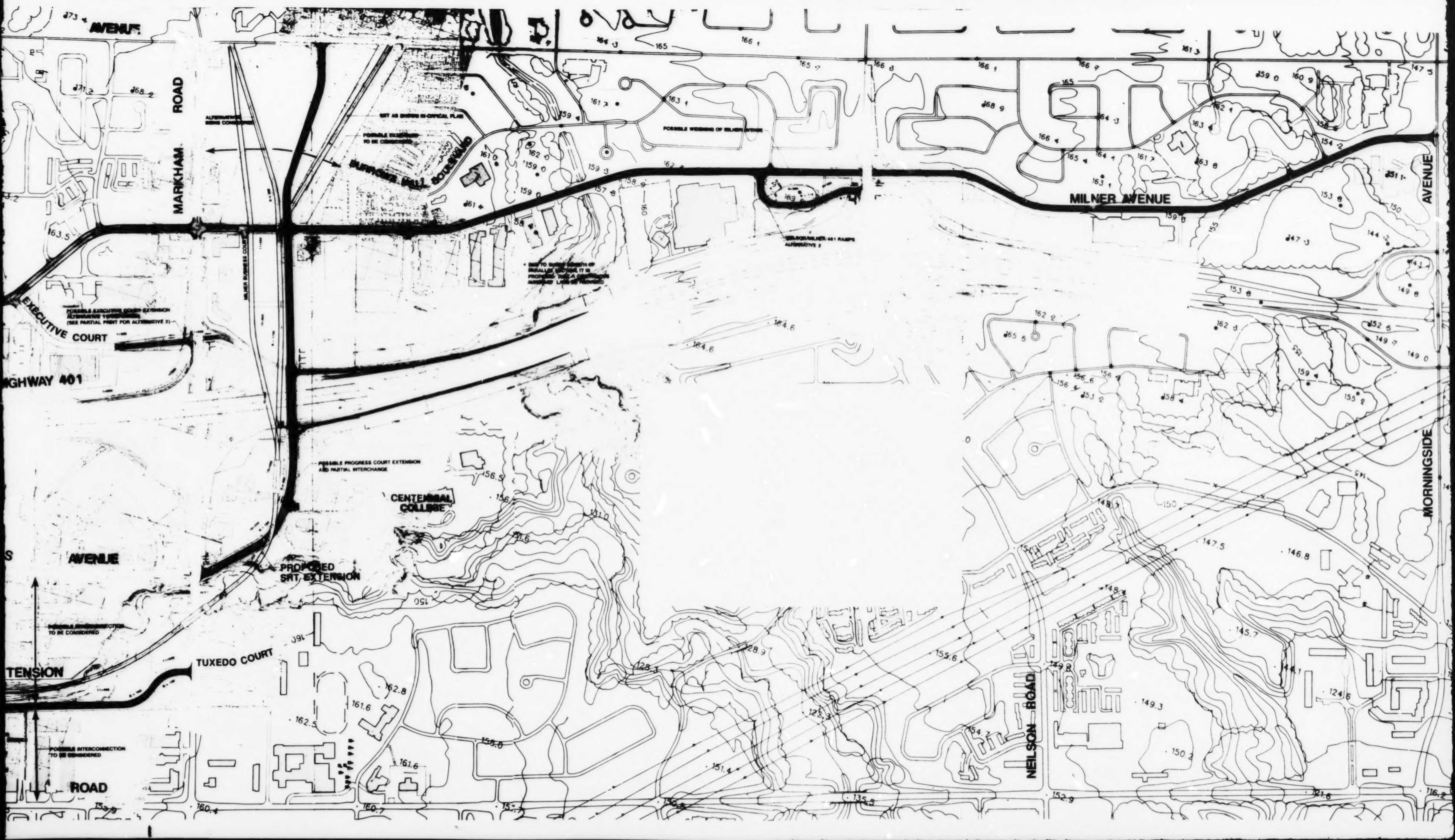
Based on the assessment and review of the additions to the network, the recommended "ultimate" transportation system is shown in Exhibit 26. It represents an integrated system which includes the SRT Extension (and Malvern Gateway), expanded surface transit and the preferred alternatives for the additions to the roadway network. The relative priority of the additions is discussed in Chapter 7 - Conclusions.

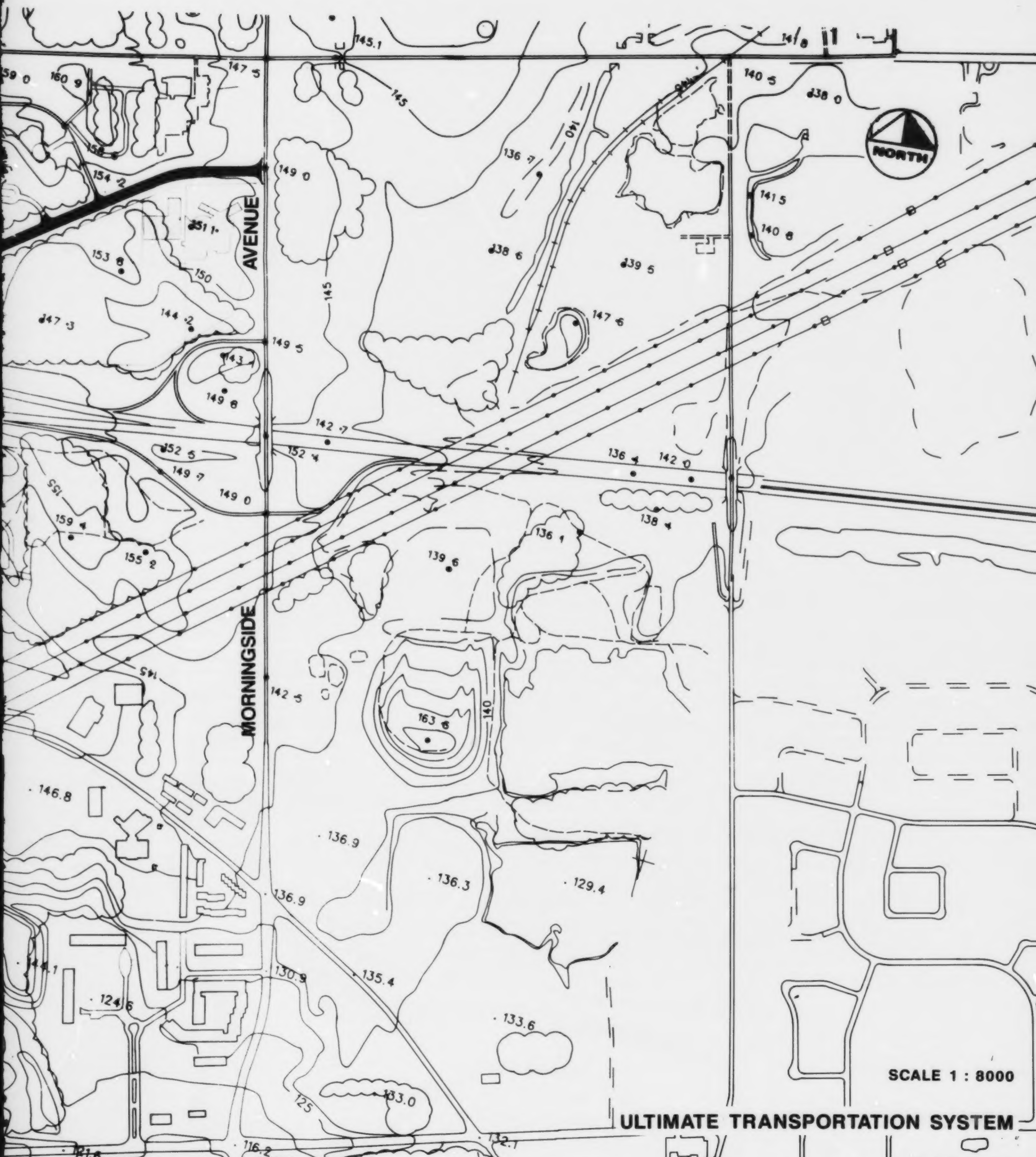
W.O. 1987-88

MILNER AVENUE CORRIDOR / MALVERN GATEWAY
TRANSPORTATION STUDY
McCORMICK RANKIN
CONSULTING ENGINEERS

SCALE 1 : 2000




AVENUE
MARKHAM ROAD
ALTERNATIVE BEING CONSIDERED
SET AS SHOWN IN OFFICIAL PLAN
POSSIBLE EXTENSION TO BE CONSIDERED
BUSINESS MALL BOULEVARD
POSSIBLE WIDENING OF MILNER AVENUE
MILNER AVENUE
MILNER BUSINESS COURT
MILNER/401 RAMPS ALTERNATIVE 2
EXECUTIVE COURT
POSSIBLE EXECUTIVE COURT EXTENSION ALTERNATIVE 1
(SEE PARTIAL PRINT FOR ALTERNATIVE 2)
HIGHWAY 401
POSSIBLE PROGRESS COURT EXTENSION AND PARTIAL INTERCHANGE
CENTENNIAL COLLEGE
PROPOSED SRT EXTENSION
AVENUE
POSSIBLE INTERCONNECTION TO BE CONSIDERED
TENSION
TUXEDO COURT
POSSIBLE INTERCONNECTION TO BE CONSIDERED
ROAD
NEILSON ROAD
MORNINGSIDE AVENUE
150
155
160
145
164.6
155.6
147.5
146.8
145.7
149.3
150.2
124.6
162.8
161.6
162.5
161.6
160.4
160.7
152.9
128.9
128.3
151.4



SCALE 1 : 8000

ULTIMATE TRANSPORTATION SYSTEM

Exhibit 26

5. MALVERN GATEWAY

5.1 INTRODUCTION

5.1.1 Background

In May 1988 the Ministry of Transportation announced its support for the development of a series of "gateways" across the Greater Metropolitan Toronto Area. The announcement stated the following:

> "The province and affected municipalities will acquire strategically-located gateway sites and develop links from these sites to major transit lines as soon as possible.
>
> Implementation of the transportation gateways concept is a key component of the regional transit strategy. Gateways will be focal points in the transportation network which will substantially increase the use of transit in the areas of greatest traffic congestion around Metro Toronto.
>
> Not only will gateways provide interchange points where people can move from cars to transit or from buses to high-speed transit, they will also attract services which cater to the needs of commuters, such as banking, shopping and day care centres.
>
> In addition, gateways will serve intercity buses and car pools, and provide a transfer location for the special transit services used by disabled travellers. These sites will become urban nodes of appropriate residential, commercial and recreational development throughout the G.T.A. (Greater Toronto Area)".

In addition, "gateways" will promote/support the continued development of major city centres and sub-centres. The announcement included the identification of possible gateways at the Scarborough City Centre and at the terminal of the possible extension of the SRT (within the Milner Avenue corridor), both of which are located within the study area.

5.1.2 Gateway Components

The elements of a gateway are already in operation at subway terminals, for example, at the Finch Station on the Yonge Line, at the Scarborough City Centre on the SRT line and at Yorkdale on the Spadina line.

The major considerations at a gateway location are transportation and land use as well as their integration. In terms of transportation, the important aspects are the nature of the services and their interface. In terms of land use, the important aspects are good access and integration.

Gateways serve different functions depending on their location. For example, the main purpose of a gateway located in a rural or suburban area is to intercept commuters travelling by car before they enter the more built-up areas. The gateway will enable them to access surface transit, feeder buses or GO Transit. On the other hand, gateways further within the Greater Toronto Area will provide an interface between cars and/or surface transit with rapid transit. They usually occur at stations for the subway or SRT. High density land uses are very desirable in the vicinity of these gateways to enable walk-in access.

Typical components for possible consideration within a gateway site are listed below. It should be emphasized that not all components have to be included.

- GO Train stations
- High density development walk-in locations
- T.T.C. and adjacent municipal bus interfaces
- Municipal rapid transit interface
- Integrated land use (residential, office, commercial, etc.)
- VIA Rail interface

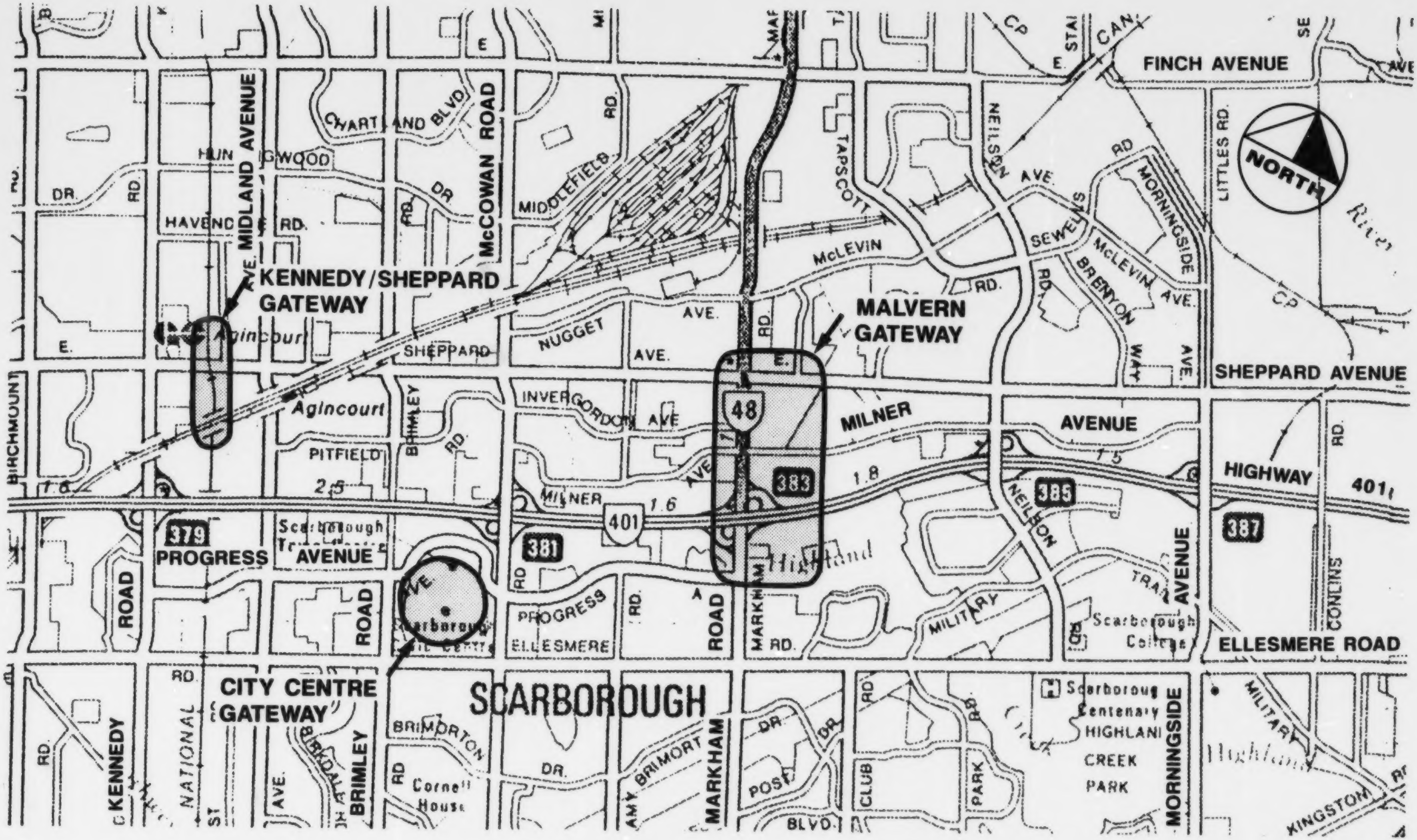
- Shuttle bus connections
- Parking
- Kiss'n Ride facilities
- GO bus connections
- Intercity bus connections
- Day care facilities
- Restaurant facilities
- Transfer for the disabled
- Taxi
- Airport service connection
- Special events
- Car rentals
- Vanpools
- Goods movement

5.1.3 Gateway Locations in the Vicinity of the Study Area

The Scarborough City Centre now provides a major multi-modal gateway function. The Agincourt GO Station at Kennedy/Sheppard has been identified as a possible gateway site. The Malvern Gateway has been identified as a potential site since it will be the terminus of the SRT and since the area has not yet been developed.

The three locations are shown in Exhibit 27.

Although the focus of the current study was on the Malvern Gateway, at the outset it was agreed that a "gateway overview" should be carried out to assess the functions of, and opportunities for, the three potential gateway sites affecting the study area and their interrelationship.



GATEWAY LOCATIONS

Exhibit 27

5.2 Gateway Overview

Each location was considered in terms of existing and potential facilities for both transportation and land use. A summary is provided in Exhibit 28 and as follows:

5.2.1 City Centre

Since it is the existing terminus of the SRT as well as the designated City Centre, the Scarborough City Centre has developed into an important gateway offering a range of transportation and land use components. In terms of transportation the City Centre is served by the SRT, surface transit, arterial roads and Highway 401. As well the Sheppard Subway is proposed to link North York City Centre and Scarborough City Centre. Although the latter is a high priority on the part of Metropolitan Toronto, it will be many years before it is in place.

In terms of land use, in 1988 there was an employment level of 10,000 (7,000 office and 3,000 retail). The target development level is office development for 40,000 employees and 8,000 residential units.

The City Centre provides, and will continue to provide, an important gateway function. The ability to increase this substantially in the short to medium term, however, is limited for the following reasons:

- primary property owner is not pursuing additional development at this time
- improvements to kiss'n ride and parking facilities are constrained by the nature of existing development
- it is desirable to increase the SRT service, however, this requires an expansion to the yard facilities (either at the existing yard or elsewhere)
- Sheppard Subway is a long term proposal.

EXISTING		COMPONENT	SYMBOL	POTENTIAL		
SCARBOROUGH CITY CENTRE	KENNEDY/SHEPPARD			SCARBOROUGH CITY CENTRE	KENNEDY/SHEPPARD	MALVERN
		TRANSPORTATION				
	●	GO TRAIN STATION			[●]	
●		GO BUS CONNECTION		●	•	[●]
●	·	HIGHWAY ACCESS		●	•	[●]
•	•	PARKING	Ⓟ	•	•	[●]
		MUNICIPAL TRANSIT INTERFACE				
●		– SRT	SRT	[●]		[●]
		– SHEPPARD SUBWAY		[●]	[●]	•
●	•	– BUSES		[●]	[●]	[●]
·	·	KISS'N'RIDE		•	•	[●]
	•	VIA/RAIL	VIA		[•]	
•		INTERCITY BUS CONNECTIONS		●	·	[●]
		SHUTTLE BUS CONNECTIONS		●	●	[●]
●	•	ARTERIAL ACCESS		●	•	●
		LAND USE				
●	·	HIGH DENSITY WALK-IN LAND USES		[●]	[●]	[●]
●	·	INTEGRATED LAND USE		[●]	[●]	[●]
		– RESIDENTIAL	Ⓡ			
		– OFFICE	Ⓞ			
		– COMMERCIAL				
		– MEDICAL OFFICES				
		– DAY CARE FACILITIES				
		– RESTAURANTS				
		– BANKING	$			
		– ETC				

· LIMITED • AVAILABILITY ● GOOD

· LESS LIKELY → • → ● MORE LIKELY

☐ PREFERRED LOCATION

GATEWAY OVERVIEW

Exhibit 28

5.2.2 Kennedy/Sheppard

The main reasons for identifying Kennedy/Sheppard as a potential gateway location are because of the existing access to the Stouffville GO Train line at the Agincourt Station as well as the unique opportunity provided by the area's proximity to two rail lines (CN and CP) and the proposed Sheppard Subway.

GO Transit started operating the Stouffville line in 1982 which today is experiencing a ridership of 1,500 trips per day. Currently a train consisting of six bi-level cars operates on the line. It cannot easily be expanded to ten cars because of the existing constraints imposed by the tight horizontal curvature at both Unionville and Markham. Current plans are to improve the level of service during the peak period within the short term. At the time of preparing this report the Province and the City of Scarborough had initiated studies regarding the Stouffville GO line.

In terms of transportation, the area is also served by Kennedy Road, Sheppard Avenue, Highway 401 and Midland Avenue. There is an interchange at Kennedy Road and Highway 401. All three of the alternative alignments for the proposed Sheppard Subway go through this area.

In terms of land use, in the immediate vicinity of the Agincourt GO Station there is a mix of low, medium and high density housing. At the intersection of Kennedy Road and Sheppard Avenue there is:

NE quadrant	-	Agincourt Commercial Centre
SE quadrant	-	gas station, small retail mall
SW quadrant	-	gas station, high rise residential
NW quadrant	-	Agincourt Mall

South of Sheppard Avenue there is light industrial development which has the potential to be redeveloped in the future.

The ability to expand the operation of the Agincourt GO station into a gateway is limited due to the lack of rapid transit services; the lack of high density development in the area; and limited parking facilities. Since the station is surrounded by recently constructed townhouses, single family residences and a few high rise apartment buildings, it would appear that redevelopment in the immediate vicinity of the station is not likely to occur in the short to medium term future. When considering a more extensive area, from north of Sheppard Avenue to south of Highway 401 and from Kennedy Road to Midland Avenue, further possibilities arise if one considers the longer term. The larger area is served by the CN-Uxbridge subdivision, the CP-Belleville subdivision (Havelock line) and Highway 401. In addition, the proposed Sheppard Subway will traverse the area. It appears possible that a new subway/GO/passenger rail station could be considered which could in turn be serviced by higher density development, assuming the redevelopment of the existing industrial areas.

Due, however to the nature of the timing of the Sheppard Subway, this would be a much longer term occurrence.

Therefore, although the Kennedy/Sheppard location is important in terms of its function as a GO station, there does not appear to be the opportunity to develop it into a gateway in the short to medium term future. In the very long term future there appears to be a unique opportunity for the development of some gateway facilities assuming the Sheppard Subway is in place and large scale redevelopment occurs.

5.2.3 Malvern Gateway

The Malvern Gateway includes the area from Sheppard Avenue to Progress Court and from west of Markham Road easterly to existing development. The Malvern Gateway was identified as a desirable gateway location since it will include the SRT Extension and its terminus and since there was a large parcel of vacant land north of Milner Avenue owned by the federal government. This parcel of land was subsequently sold in March 1989 to the Frum Development

Group and so the planning of the gateway has to take into consideration the developer's proposal.

In terms of transportation, the extension of the SRT through the site enables the provision of an attractive regional service. As part of this a major bus terminal/SRT station interface should be provided. This in turn would enable the consideration of relocating buses and kiss'n ride facilities from the Scarborough City Centre.

The area is also served by Sheppard Avenue, Markham Road, Milner Avenue and Highway 401. There is a full interchange at Markham Road and Highway 401. In addition, a major roadway improvement being considered for the area is the Progress Court Extension to Sheppard Avenue with ramps to and from Highway 401 to the east.

In terms of existing land use, the area can be divided into three sections:

Sheppard to Milner - 45 acres undeveloped land of which
37 acres are owned by Frum Development Group
and
8 acres are owned by Metropolitan Toronto

Milner to Highway 401 - office tower and hotel
- new 15 storey office building under construction

Highway 401 to - mixed use west of Progress Court
Highland Creek - Centennial College east of Progress Court

The Frum Development Group has submitted their development application for 91,042 m^2 of office and 3,300 residential units. This is currently being reviewed by the City. There is development interest in the vacant land in the vicinity of Milner Business Court as well as redevelopment potential south of Highway 401.

In conclusion it can be seen that the area has the potential to become a thriving inner gateway offering a full range of "gateway" components in light of the proposed SRT Extension and development proposals in the area. There is the opportunity to provide a number of the gateway components which are not available at the Scarborough City Centre due to the nature of the site, however, there are a number of issues regarding the development of the gateway. These are discussed in Sections 5.3 to 5.6.

5.2.4 Interrelationship

At the present time, the City Centre is functioning as an important gateway while the Agincourt GO Station is functioning as a minor gateway. Although both of these locations will continue to provide a number of "gateway" services, it is desirable to develop an additional transit terminal/gateway site focused on the SRT Extension due to the limitations of providing a full range of services at both of the existing locations. In the medium term future, assuming the SRT Extension is in place, Malvern has the ability to become a major gateway since it will be the terminus of the SRT. Although certain services will be relocated to Malvern, the City Centre will continue to be an important gateway providing complementary and/or additional service. The Agincourt GO Station could grow in importance if it is better integrated with bus service.

In the long term future, assuming the Sheppard Subway is in place, although both the City Centre and Malvern will continue to provide important gateway services, there could be the opportunity for the Kennedy/Sheppard area to become an important gateway as well. A combination subway/GO/passenger rail facility could be considered as well as the redevelopment of the industrial area.

Therefore, although the Malvern Gateway has the greatest potential in the short to medium term future, both the City Centre and Kennedy/Sheppard areas are of importance as well as the interrelationship of the three areas.

Having three locations can be beneficial since it enables the dispersion of the effects of serving a large number of commuters.

5.3 Malvern Gateway and SRT Extension

A number of components and related issues have been identified regarding the objectives for the Malvern Gateway and its implementation. These are addressed in this section.

5.3.1 SRT Extension

The Malvern Gateway requires the extension of the SRT in order to provide an attractive regional service and to become a viable gateway. A number of issues have been identified regarding the SRT Extension:

- alignment
- stations
- connection to Sheppard Subway
- storage and maintenance yards
- staging
- future course of action

These are discussed in Section 4.3 Possible Additions to the Transportation Network under Section 4.3.1.1 SRT Extension. Currently Metropolitan Toronto and the Toronto Transit Commission, in conjunction with the City of Scarborough, are undertaking studies of the SRT Extension alignment and stations as well as the storage and maintenance yards. Those alternative locations within the gateway which have been identified during this study are shown as follows:

- possible SRT alignments - Exhibit 29
- possible SRT station locations - Exhibit 30
- possible maintenance and storage yard locations - Exhibit 31

5.3.2 SRT/Bus Terminal Interface

At the terminus of the SRT Extension and north of Highway 401 it is desirable to have a major bus terminal/SRT station interface.

Bus Bays

TTC have identified the need for 8 to 10 bus bays in the short term and possibly 12 to 15 in the longer term, depending on the surface transit strategy. GO Transit have indicated that this location would be a stop (not a terminal) and so they would require a maximum of 4 bays for GO buses.

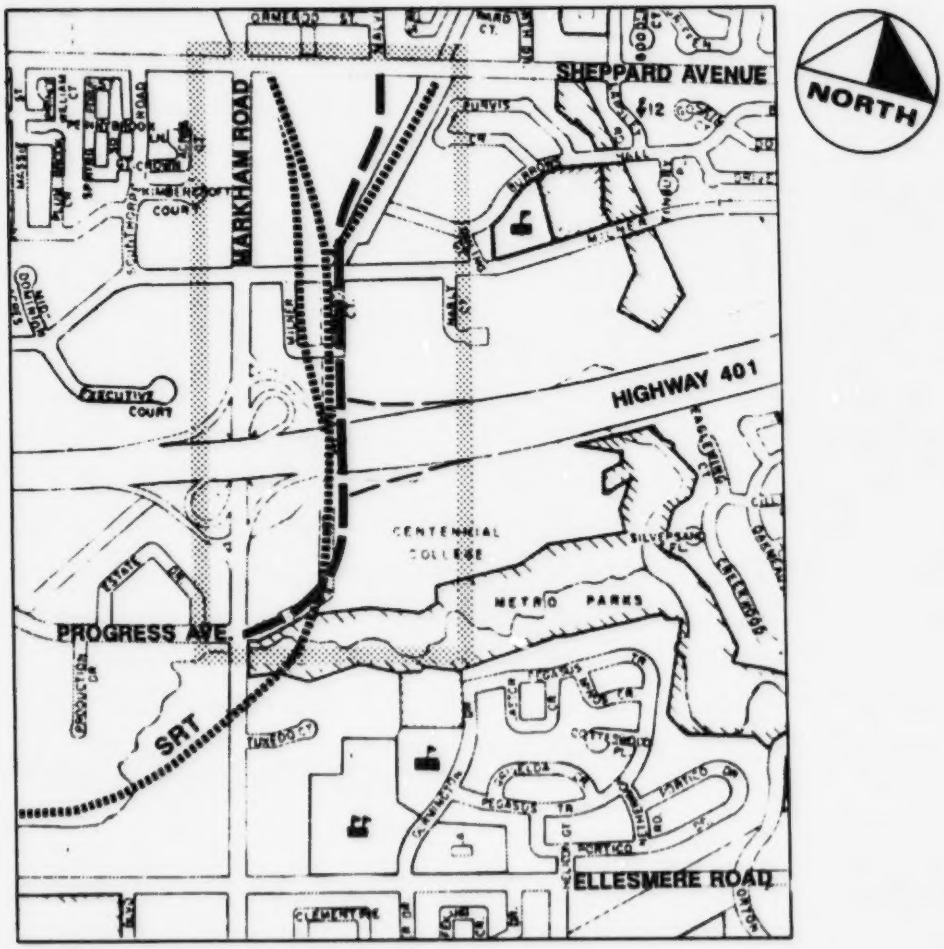
Access

The most important objective is to locate the rider transfer from buses to the SRT as close to the SRT station as possible in order to maximize the attractiveness of the site. In addition, transit movements should be made as operationally easy as possible. For example, the concentration of the bus movements should be located away from the Markham/Sheppard intersection and signal priorities should be considered.

Land Use

The bus terminal design should reflect the high value of the land for potential development and should therefore incorporate operational features that will minimize land requirements.

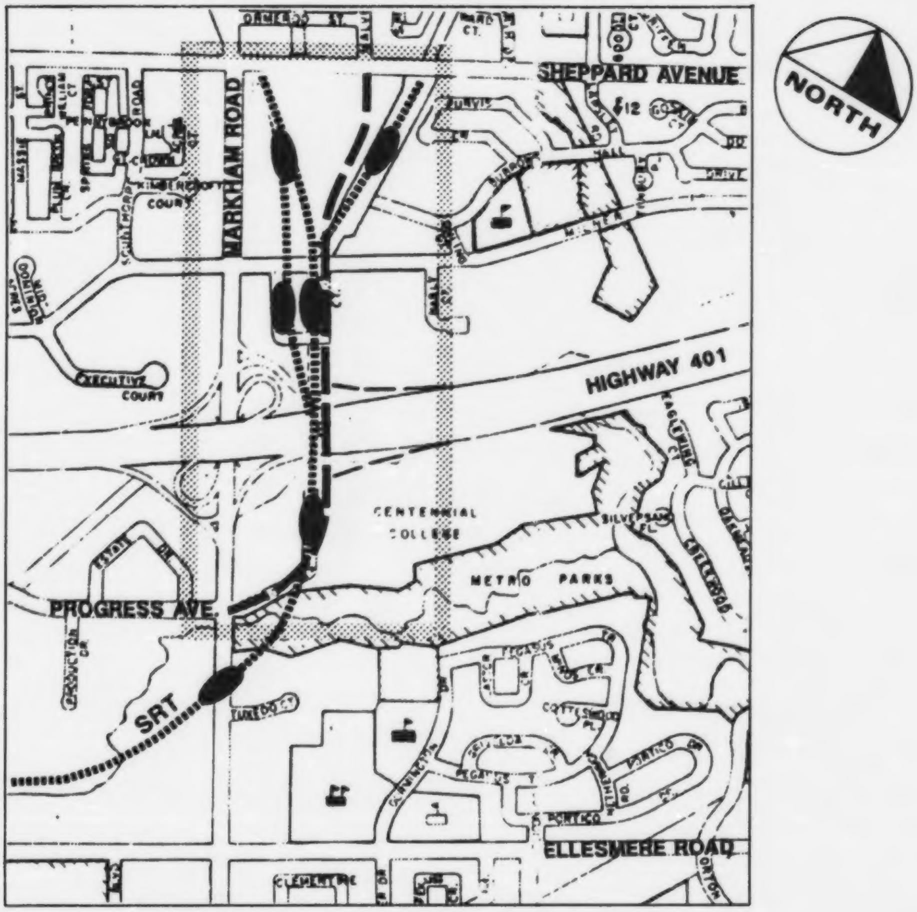
In order to enable walk-in access, the bus terminal should be integrated with high density office/retail/residential land uses. In addition it is desirable to provide a range of services for the commuters.



POSSIBLE SRT ALIGNMENTS

NOTE:
ADDITIONAL ALIGNMENTS MAY BE DEVELOPED DURING ALIGNMENT STUDY.

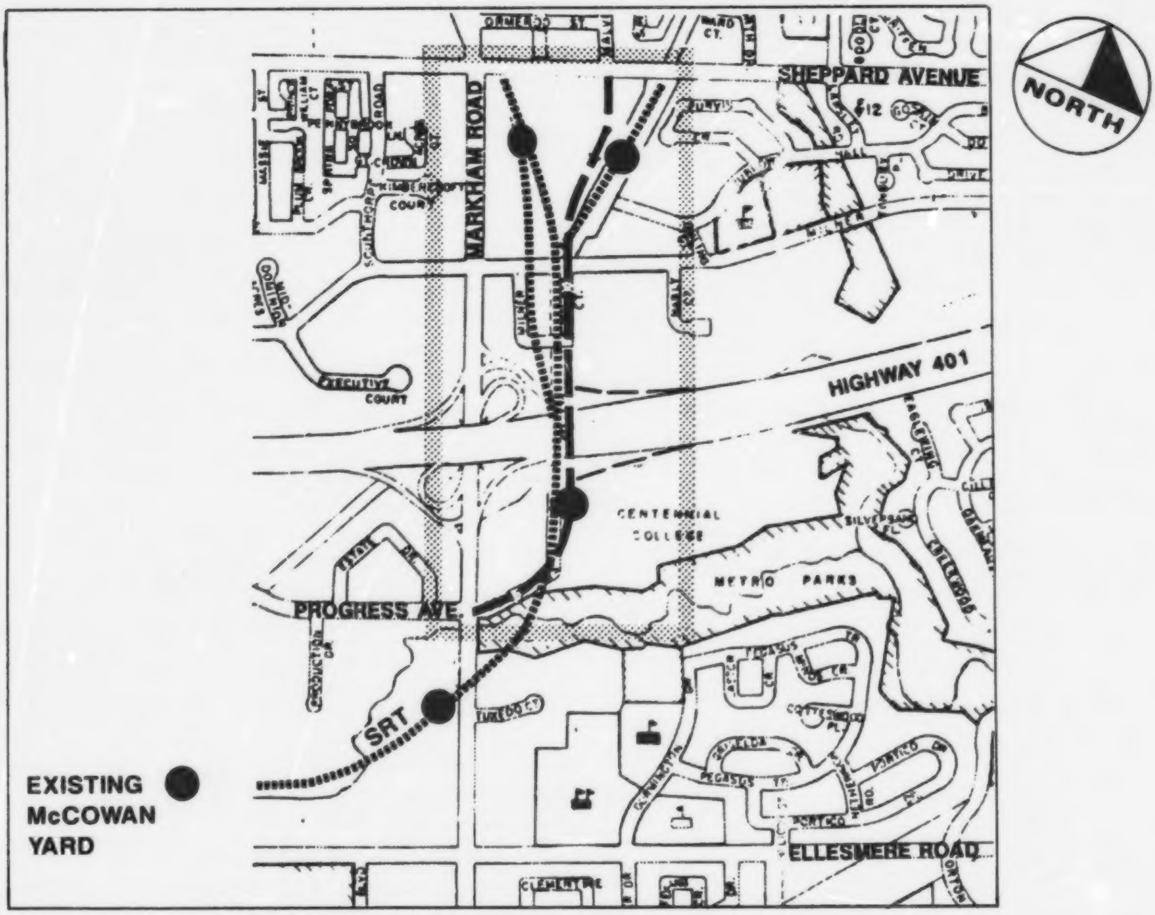
Exhibit 29



POSSIBLE SRT STATION LOCATIONS

NOTE:
STATION LOCATIONS SUBJECT TO
MODIFICATION DURING ALIGNMENT STUDY.

Exhibit 30



POSSIBLE MAINTENANCE AND STORAGE YARD LOCATIONS

NOTE:
ADDITIONAL LOCATIONS MAY BE CONSIDERED DURING YARD STUDY.

Exhibit 31

5.3.3 Commuter Access

5.3.3.1 Parking

The provision of commuter parking is an important consideration within the gateway. It can play an important role in intercepting those commuters travelling by car and originating from the north and east.

The amount of parking to be provided in total throughout the gateway will be a policy decision. It would be desirable to provide between 1,000 and 3,000 spaces based on what is provided at the major subway stations:

Subway Station	Parking Lot Capacity (1989)	Average Daily Usage (including turnover) (1989)
Finch	2,841	3,032
Islington	1,263	1,487
Kennedy	690	745
Kipling	1,344	1,668
Wilson	2,055	1,836
Yorkdale	1,012	973

(Source: Toronto Transit Commission - August, 1989)

It is recommended that parking facilities be located throughout the gateway in order to serve the different origins of the commuters as well as to lessen possible congestion. In addition, the recommendation to divide the parking requirements throughout the gateway is further supported by the high cost of land within the gateway and since most of it is under private ownership. As well parking structures should be considered. Through negotiations with private owners, the possibility of shared parking facilities (ie between apartment dwellers and office workers) as exists at the Sheppard Centre could be considered.

Possible commuter parking locations are shown on Exhibit 32.

5.3.3.2 Kiss'n Ride

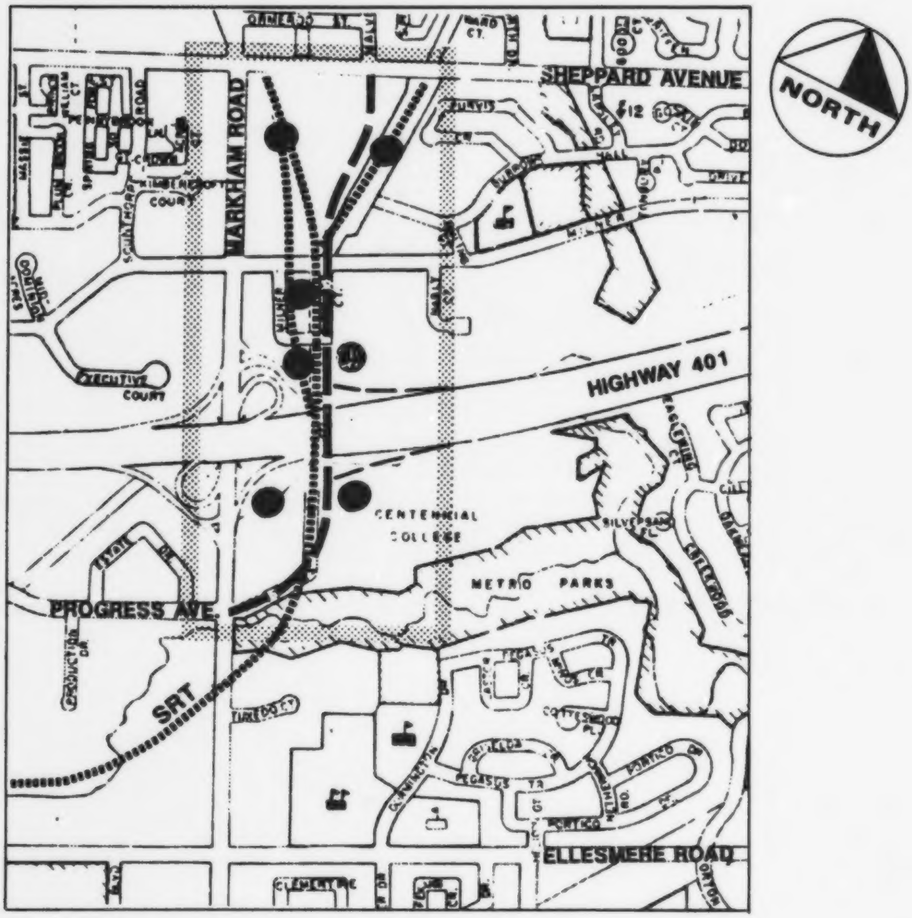
Kiss 'n ride facilities are desirable since they provide convenient access to the station. If they are not provided, commuters tend to use the adjacent roadways. Therefore some kiss 'n ride facilities should be provided at each station which in turn will disperse the effects throughout the gateway. The amount of kiss'n ride facilities will vary depending on the nature and location of each station. Possible kiss'n ride facilities are shown on Exhibit 33.

5.3.4 Land Use

Higher densities are required to provide the ridership needed to support the SRT Extension. From a transportation viewpoint the most desirable land use is a combination of office and residential since it will generate and attract riders and balance the demands for the transportation facilities. Good access to a station is very desirable. As well, land use and transit services should be well integrated. The Scarborough Official Plan allows densities of up to 3 times density in a 150 metre radius of an SRT Station. Experience within the Scarborough City Centre has shown a substantially higher transit modal split where the SRT has preceded development (see Section 3.2.3).

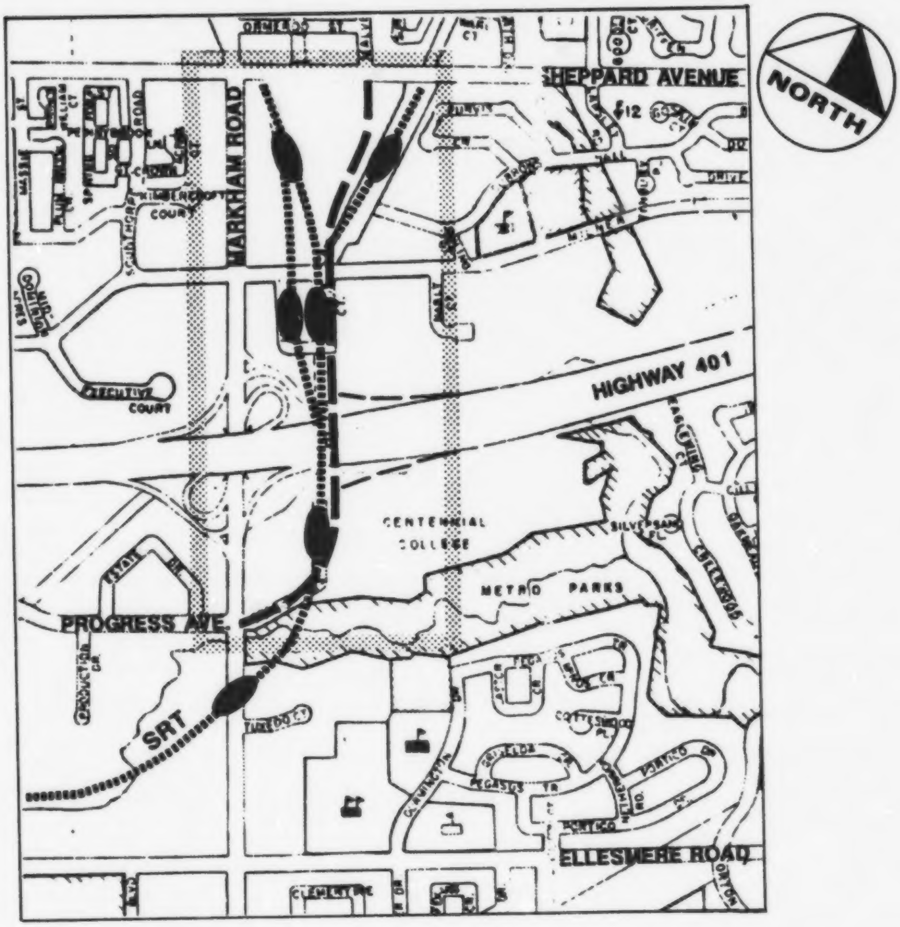
5.3.5 Roadways

Within the Malvern Gateway an important consideration is the possible Progress Court Extension with ramps to and from Highway 401 to the east. The proposal is discussed in detail in Section 4.3.2.4 but in summary it provides better accessibility to the areas north and south of Highway 401 and relief to Markham Road.



POSSIBLE COMMUTER PARKING LOCATIONS

Exhibit 32



POSSIBLE KISS'N RIDE LOCATIONS

Exhibit 33

5.3.6 Staging

Staff of the Toronto Transit Commission have advised that staging of service by the connection of the Malvern site to the City Centre via a busway is not a viable consideration. Where an intermediate modal change/transfer is required, particularly for a short distance, commuters usually will delay their modal change, in order to bypass the intermediate transfer. A commuter coming from the east and destined for the Bloor/Danforth subway, may now drive to Scarborough City Centre to access the SRT. Even with the provision of convenience access, the same commuter is not likely to drive to the Malvern Gateway, change to a shuttle bus destined for the City Centre and then change to the SRT. If the SRT was extended, however, it is likely that the commuter would make his modal change at the Malvern Gateway.

Therefore, a fully functioning gateway requires the SRT Extension to be in place although some interim development may be viable.

5.3.7 Implementation

To pursue the implementation of the Malvern Gateway steps have to be followed in order to protect for and/or implement both the SRT Extension and the gateway facilities.

Regarding the SRT Extension, Metropolitan Toronto in conjunction with the Toronto Transit Commission are undertaking preliminary design studies regarding the SRT alignment developed in 1982/83 as well as a review of the alternatives generated during the course of the study in response to the City of Scarborough's request of May 23, 1989. Further to this, on January 15, 1990 Scarborough Council directed staff to consider alternative alignments for the SRT Extension and negotiate with developers in the area.

In terms of the approvals process, Ontario Regulation 205, made under the Environmental Assessment Act, states that exemptions to the requirements of the Environmental Assessment Act do not include:

> "5.(3) (b) A new bus service on an exclusive right-of-way or a new rail transit system;
>
> (c) A new station, terminal or marshalling yard for a rail transit system;"

Therefore it can be concluded that an individual environmental assessment will be required for the SRT Extension.

An integral part of determining a preferred alignment for the SRT Extension, the gateway components and their location will be the determination of the new and/or expanded SRT yard. Currently Metropolitan Toronto and the Toronto Transit Commission in consultation with the City of Scarborough are carrying out a study to identify and assess further alternative locations.

Regarding the provision of gateway facilities, discussions have taken place, and will be continuing, with property owners to ensure that any development of their lands takes into account the needed gateway facilities (access, parking, services). The discussions will become the basis for future negotiations.

6. PUBLIC PARTICIPATION

As noted earlier the study was organized to enable public involvement throughout the study and to be flexible in order to meet the community's needs. Therefore an extensive public participation program was undertaken as an integral part of this study. Reports on each series of information centres are included in the Appendix while the more important points are summarized here.

Three series of public review were held, with four information centres scheduled during each review (one located within each ward). The information centres were advertised by:

- first class mailing of +11,000 notices to assessed property owners and tenants within the study area.
- first class mailing to all community associations and interest groups within the City of Scarborough.
- placement of advertisements in the Scarborough Mirror, Scarborough News and Toronto Star (Neighbours East Section).
- release of a public service announcement.
- distribution of notices to community facilities.

The information centres were organized as informal forums where those who attended had the opportunity to discuss the study on a one-to-one basis with study staff. The display panels were developed and presented in such a manner that attendees could review them on their own if they desired. Attendees were requested to sign the register upon entering the information centre and to complete a comment sheet after having reviewed the material on display. During the last series, a formal presentation was made at each information centre.

The information centres were staffed by representatives of Scarborough Works Department, Scarborough Planning Department, the Ministry of Transportation - Toronto Area Co-ordinating Office, Metropolitan Transportation Department, Metropolitan Planning Department, Toronto Transit Commission, GO Transit and McCormick Rankin Consulting Engineers.

In addition, the information centres were attended by representatives of Scarborough Council and Metropolitan Council.

Following the information centres, letters of acknowledgement were sent to all of those who submitted comment sheets. In addition, more detailed responses were prepared for those who asked questions or for more information.

6.1 March/April 1989 Public Review

The first series of information centres was held at the end of March/early April 1989. The purpose of the information centres was to introduce the study and receive public comments.

Four information centres were held:

Date	Location	Registered Attendance
• Wednesday, March 29, 1989	3:00 to 9:00 p.m. Rotunda, Scarborough Civic Centre 150 Borough Drive	53
• Thursday, March 30, 1989	7:00 to 9:00 p.m. Burrows Hall Junior School 151 Burrows Hall Boulevard	42

• Tuesday, April 4, 1989	7:00 to 9:00 p.m. George B. Little Junior School 125 Orton Park Road	12
• Wednesday, April 5, 1989	7:00 to 9:00 p.m. C.D. Farquharson Junior School 1965 Brimley Road	31

Total Registered Attendance	138
Estimated Attendance	± 200
Comment Sheets Received	57

Overall the information centres were well attended. Holding the information centres on four days in four different locations proved to be successful and was appreciated by the public. There was general support for the study and its objectives with members of the public demonstrating a good knowledge and understanding of the issues within the Milner Avenue Corridor.

The general issues presented by the public were:

- ackowledgement that the area is undergoing change
- recognition of the need for good planning to guide change
- future changes to take into consideration the protection of the existing residential neighbourhoods and the natural environment
- support for the Sheppard Subway
- support for the SRT and its extension
- support for the Gateway concept
- identification of specific existing concerns

Specific comments provided by the public, which could be addressed in the shorter term were summarized and a proposed course of action was identified by the Technical Advisory Committee following the assessment of the existing network. Those issues which were considered to be broader long term issues and policy issues were not included since they were considered to be part of the current Milner Avenue Corridor and Malvern Gateway Transportation Study. The public comments and interim improvements were reviewed at the June 1989 public information centres, and are summarized in Table 6.

6.2 June 1989 Public Review

The second series was held in mid to late June 1989. The purpose of the information centres was to review the three major areas of analysis, specifically:

- the identification of interim improvements based on the assessment of the existing system and the public comments from the March/April 1989 public review.

- the assessment of the various levels of development and the associated transportation requirements.

- the assessment of the existing and desirable components for the three gateway sites, namely; the City Centre, Kennedy/Sheppard and Malvern/Markham/Sheppard).

Four information centres were held:

TABLE 6

PUBLIC COMMENTS/INTERIM IMPROVEMENTS

	Public Comments - Recommended for further review	Comments
1)	extend advanced green at Milner W.B. to Markham S.B. in p.m.	being assessed by Metro Transportation
2)	extend advanced green for Neilson S.B. to Ellesmere E.B.	
3)	advanced green for westbound Sheppard traffic at Markham	
4)	traffic using Scunthorpe to avoid Markham/Sheppard intersection	City has formally requested Metro for advance green at Markham/Sheppard; City considering other measures to limit traffic infiltration on Scunthorpe
5)	3-way stop at Invergordon and Glenstroke	City will undertake traffic counts
6)	post 'no exit' sign at Golf Club Road into Helicon Gate	
7)	Additional parking for businesses and shopping at City Centre	subject to "City Centre Monitoring Report".

Public Comments - Being considered as part of this study

1) improve exit from Highway 401 E.B. to Progress Court
2) alternate access into Centennial College
3) congestion at Markham Road and ramps to Highway 401
4) extend Burrows Hall Boulevard to Markham Road
5) reduce traffic on Dailing Gate.

TABLE 6 cont'd

	Public Comments - Not Recommended for further review	Comments
1)	during p.m. peak hour, allow pedestrians to cross Markham Road on north side only of Milner Avenue	not desirable to limit pedestrian movements
2)	prohibit school bus and car parking on Milner Avenue and Burrows Hall Blvd	not warranted to improve traffic operations
3)	improve intersection of Havenview/ Shorting/Sheppard	no satisfactory solution for improving offset T-intersections
4)	install signals at Murison Boulevard/ Sheppard Avenue	1987 analysis did not meet warrant, however will be updated
5)	make Milner Court one way only	local street intended to provide two-way access
6)	new street between Murison and Milner	could cause traffic infiltration into the community
7)	new bridge over Highway 401 joining Dean Park Road and Morrish Road	beyond limits of study area
8)	improved kiss 'n ride/drop-off at City Centre	limited due to nature of existing development

Date	Location	Registered Attendance
• Tuesday, June 20, 1989	3:00 to 9:00 p.m. Rotunda, Scarborough Civic Centre 150 Borough Drive	21
• Wednesday, June 21, 1989	7:00 to 9:00 p.m. Military Trail Public School 701 Military Trail	10
• Thursday, June 22, 1989	7:00 to 9:00 p.m. Burrows Hall Public School 151 Burrows Hall Boulevard	30
• Tuesday, June 27, 1989	7:00 to 9:00 p.m. White Haven Public School 105 Invergordon Avenue	18
	Total Registered Attendance	79
	Estimated Attendance	100
	Comments Sheets Received	14

Attendance at the June 1989 public information centres was lower than expected. Generally people make a concerted effort to attend an information centre if 1) they strongly oppose a study or specific proposal or 2) they are directly affected by a specific proposal. Since there is general support for this study and since the road improvements under consideration were developed to minimize negative community impacts such as traffic infiltration and have not yet been developed in detail, this could explain the low number of people in attendance. From both series of information centres it was apparent that, although a number of residents expressed concerns about the impacts associated with increased development, there was a general recognition that future changes within the study area are inevitable and need to be properly planned.

Those who attended the information centres showed a great deal of interest in the study and the issues and took the time to review most of the information in detail.

The general issues identified by the public were:

- support for the SRT and its extension up to and beyond Sheppard Avenue.
- support for the 'gateway' concept
- concern about existing levels of congestion
- concern about the scale of future development in the study area and the Greater Toronto Area in general.
- concern about the effects of future development on existing residential communities
- interest in the follow-up to the March/April 1989 public review through the identification of the interim improvements and their status
- specific traffic operation concerns within the study area

6.3 December 1989 Public Review

The third series was held in early December 1989 in order to review the study conclusions, including the possible additions to the transportation network and the status of the Malvern Gateway.

Four information centres were held:

Date	Location	Registered Attendance
• Monday, December 4, 1989	3:00 to 9:00 p.m. Rotunda, Scarborough Civic Centre 150 Borough Drive	30
• Tuesday, December 5, 1989	7:00 to 9:00 p.m. Military Trail Public School 701 Military Trail	4
• Thursday, December 7, 1989	7:00 to 9:00 p.m. Burrows Hall Public School 151 Burrows Hall Boulevard	13
• Monday, December 11, 1989	7:00 to 9:00 p.m. White Haven Public School 105 Invergordon Avenue	19
	Total Registered Attendance	66
	Estimated Attendance	80
	Comments Sheets Received	20

The information centres included a formal presentation at 7:30 p.m. followed by a discussion period.

Again, attendance at the December 1989 public information centres was lower than expected, particularly in light of the effort that had been made to make people aware of the possible additions to the roadway/transit network. Those who attended, however, showed a great deal of interest in the study and the issues. Many were supportive of the City of Scarborough undertaking a study of this nature early in the planning process. One of the main interests of those who attended, however, was to obtain a better understanding of the type, density and location of future development and redevelopment within the study area. As was explained throughout the public review, this was not addressed by this study. It will be subject to further study and the determination of Scarborough Council.

More specifically, the main public comments can be summarized as follows:

December 4, 1989
- concerns with Bellamy Road overpass
- concerns about proximity of SRT Extension to residential areas on east side of Markham Road
- many of the landowners within the industrial districts attended the meeting and provided comments regarding the transportation additions and the specific alternatives

December 5, 1989
- traffic volumes on Military Trail
- timing of Neilson/Milner/401 ramps
- type of redevelopment

December 7, 1989
- priorities re: roadway improvements
- timing
- funding

December 11, 1989
- timing of development relative to road improvements
- timing of development of gateway

6.4 Conclusions

During the course of the study it was apparent that those members of the public who got involved were very supportive of the City of Scarborough undertaking a study at this level of strategic planning.

The main public comments can be summarized as follows:

- support for the SRT Extension
- support for the Malvern Gateway
- concern about the scale and nature of future development in the study and in the Greater Toronto Area in general
- concern about the effects of future development on existing residential communities
- specific traffic operation concerns within the study area.

7. CONCLUSIONS

The industrially-designated areas within the study area are experiencing pressures for change in terms of both redevelopment and new development of various types and densities of land use. This includes the development of the Malvern Gateway area. In response to these pressures, this study has provided a strategic planning overview to determine the constraints, if any, provided by the transportation network and also the potential transportation opportunities. This overview will provide Scarborough Council and staff with an understanding of the transportation implications as they proceed to address the future development of the study area.

To this end, the study has assessed the following:

(i) the operation of the existing transportation network including the operation of the signalized intersections;
(ii) the long range capability of the transportation network to accommodate the increased traffic and transit requirements associated with additional development;
(iii) the interrelationship of the potential gateway locations in the vicinity of the study area; and
(iv) the issues regarding the Malvern Gateway.

The analysis of the transportation network included:

- an assessment of the operation of the existing signalized intersections (intersection analysis)
- an assessment of the operation of the overall network for various future levels of development (travel demand analysis)

For the intersection analysis, existing signalized intersections were assessed in terms of level of service based on existing traffic counts during the a.m. and p.m. peak hours.

For the travel demand analysis, a range of land use scenarios was considered and applied to various transportation networks. For the most part, the land use scenarios were defined by the number of potential employees since employment has the greatest impact on the transportation network due to the concentration of travel demands during the peak periods. The land use scenarios are explained in Section 3.3.3.

In summary, the travel demand analysis has shown that the base road network (existing network + Highway 401 collectors) with localized improvements, could accommodate the "permitted" level of development, which represents 75,000 employees. The "permitted" level of development is defined in detail in Exhibit 10. It includes those developments approved by May 1989 and 0.5 industrial coverage on the remainder of the lands within zones A to G of the study area. It also includes the target employment level of 40,000 for the City Centre.

The localized improvements refer to the intersection improvements identified during the study for the three critical intersections, namely: Milner Avenue/McCowan Road, Milner Avenue/Markham Road and Progress Avenue/Markham Road.

If the City of Scarborough decides to consider levels of development beyond that associated with the "permitted" level, then additions to the transportation network will have to be implemented. A number of additions to the transportation network have been identified, as shown on Exhibit 18. They include the SRT Extension, the Malvern Gateway and additions to the roadway network. Following the review of these by the public and the Ministry of Transportation and based on the results of the assessment of each proposal, they have been identified by the Technical Advisory Committee for future protection/implementation. Together, the additions create an "ultimate" transportation system.

Computer modelling work has demonstrated that this "ultimate" network would be able to handle well beyond the "permitted" development level. This network was shown to be at capacity for land use scenario 6 which represents 135,000 employees, an increase of 60,000 employees above the "permitted" level of development.

In addition, the study has identified the desirable components for the Malvern Gateway. For a fully functioning gateway, the SRT Extension should be in place although staging of the gateway facilities is recommended so that the gateway can be made fully operational once the SRT is extended north of Highway 401.

The foregoing conclusions are discussed further in the following sections.

7.1 Existing Transportation Network

7.1.1 Transit

The study area is well served by local and regional bus transit with the City Centre being the focal point. Regarding existing bus service, staff of the Toronto Transit Commission have advised that their policy is to assess the provision of surface transit on an ongoing basis. The existing service is not operating at capacity and so there is flexibility within the system.

7.1.2 Existing Roadway Network

Regarding the existing roadway network, the travel demand analysis has shown that there are no major network deficiencies although there are some localized operational concerns, for example, at the intersections of Milner Avenue/McCowan Road, Milner Avenue/Markham Road and Progress Avenue/Markham Road.

The analysis of all of the signalized intersections within the study area assessed the level of service based on existing traffic volumes. Twenty intersections were found to be operating with a volume / capacity ration greater than the desirable criteria.

The following improvements were identified for consideration for the three key intersections within the study area. These intersections are considered to be "key" due to their strategic location within the study area.

Each intersection, however, will be subject to more detailed analysis by the City of Scarborough and Metropolitan Toronto prior to any changes being approved by the Councils of either municipality. Where a modification is approved, the required funding will subsequently have to be obtained, prior to any changes being made.

Milner/McCowan

- modify the signal timing
- add an exclusive southbound right turn lane and an exclusive northbound right turn lane.

Milner/Markham

- modify the signal timing
- add an exclusive southbound right turn lane and an exclusive northbound right turn lane.

Progress/Markham

- modify the signal timing
- add a southbound right turn lane
- add an eastbound double left turn lane

Other Intersections

- as appropriate

It should be noted that the implementation of various roadway improvements could in turn replace the need for some of the intersection improvements. For example, if the Progress Court Extension and partial interchange was in place, then an eastbound double left turn would not be required at the Progress / Markham intersection.

7.2 "Ultimate" Transportation System

As explained earlier, a number of additions to the existing network have been identified which together form an "ultimate" network. The travel demand analysis has shown that the "ultimate" network would be able to handle well beyond the "permitted" level of development.

The additions identified include:

- transit - SRT Extension
  - Malvern Gateway
  - surface transit

- roadways - new facilities and changes to existing facilities

The study has concluded that consideration should be given to the protection of all of the additions, since this would provide the greatest flexibility. The actual implementation of each of the additions, however, will be dependent on numerous factors including the nature, location and timing of future development, Council review and approval, Ministry of Transportation review and approval, the receipt of the necessary approvals under the Environmental Assessment Act and the Planning Act and securing of the required funds. As well, for additional development to be approved, specific additions may have to be committed to or in place.

Nevertheless, based on the existing understanding of development applications within the area and in light of the knowledge that the additions will have to be considered individually in order to implement them, they have been considered on their own and given a relative priority.

7.2.1 Transit

SRT Extension

The following benefits/advantages have been identified by this study for the SRT Extension:

- it would provide relief to the roadway network and/or permit additional development

- it would provide the opportunity for higher densities of development within the corridor particularly in the vicinity of the stations and for increased transit usage within the corridor. The assessment of the SRT Extension (see Section 4.2.4.4) demonstrated that, based on the application of Scarborough's Official Plan policy of permitting three times (3x) possible coverage within 150 metres of an SRT station (south of the Highway 401) and applying it to the SRT Extension and assuming stations at Bellamy Road, Markham Road, Centennial College, Milner Avenue and Sheppard Avenue, 25,000 additional jobs over and above the "permitted" level could occur. As a result, the potential ridership within the peak hour could range from 3,500 (30% modal split) to 5,500 (50% modal split).

- the associated benefits are maximized the earlier the implementation of the SRT Extension (i.e. a higher transit modal split will be achieved) and early implementation will enable better integration with the surrounding land use.

- it offers the opportunity to provide gateway facilities in a location which enables improved access to rapid transit for pedestrians and from the local and regional transportation networks particularly for commuters coming from north of Highway 401 and east of Markham Road. In actuality it "drives" the development of the Malvern Gateway.

  A fully functioning gateway requires the SRT Extension to be in place although some interim development may be viable.

- the Malvern Gateway and SRT Extension will result in additional surface transit (in order to serve the gateway) and a reorientation of the existing service in response to changes in patterns of demand.

Therefore, the SRT Extension has been identified as an important transportation initiative.

Malvern Gateway

The study has determined that an important opportunity exists to develop the Malvern Gateway in conjunction with the SRT Extension. Many benefits associated with the implementation of the Malvern Gateway have been identified including:

- the ability to intercept commuters from the east and north-east and have them use transit as soon as possible
- the ability to serve a variety of commuter origins and destinations thereby reducing localized congestion if the gateway components (parking, kiss 'n ride, etc.) are located throughout the area.
- the increase in the benefits associated with both transit and higher density land uses.
- the ability to supplement the existing services provided at the City Centre.

It was not possible to finalize detailed plans during the course of the study due to the range of issues and the outstanding status of many of them. Nevertheless, the main conclusion was that the SRT needs to be extended for a fully functioning gateway to be developed. In the interim, the staging of the gateway facilities may be viable and should be considered.

A number of components were identified:

- major bus terminal/SRT station

-	TTC requirements	- 8 to 10 bus bays in short term
		± 10 to 12 bus bays in long term
		- bus layover facilities
-	GO Transit requirements	- maximum of 4 bus bays

- SRT stations
- Kiss 'n ride - to be provided at each station
- parking - 1,000 to 3,000 spaces to be provided throughout the gateway area

It should be noted, however, that the type, nature and location of the gateway components are subject to:

- determination of the SRT alignment
- provincial and municipal policy decisions
- discussions and negotiations with property owners within the SRT Extension corridor.

Surface Transit

Future bus routings have not been identified since they will be dependent on the nature of future demand. Nevertheless a well-integrated transportation network including the SRT Extension will include additional surface transit service in order to serve the Malvern Gateway as well as a reorientation of some of the existing routes. Therefore, the level of service within the study area will be increased due to the SRT Extension, its stations and the development of the Malvern Gateway.

7.2.2 Roadway Improvements

A range of feasible additions to the existing network have been identified which together create an ultimate roadway network. Without the future development in the study area being tied down, it was not possible to identify the specific timing/priority of the additions to the roadway network. Nevertheless, based on the nature of development interest within the study area, in conjunction with the effects of each of the links, it is possible to provide a comparative analysis of their priority.

As explained earlier, the critical links in the existing network are McCowan Road, Markham Road and access to Milner Avenue. Of the identified possible additions, four of them directly address the critical links:

- Executive Court Extension
- Progress Court Extension and Partial Interchange
- Milner/McCowan Grade Separation
- Bellamy Road Overpass

Three other roadway improvements are also proposed which would operate independently of the four improvements listed above. These are:

- Bushby Drive Extension
- Widen Milner Avenue
- Neilson/Milner/Highway 401 ramps

The first group of four roadway additions (Executive Court Extension, Progress Court Extension, Milner/McCowan Grade Separation and Bellamy Road Overpass) offer additional access to the study area while tempering the critical nature of the McCowan Road and Markham Road crossings of Highway 401 and would also reduce the dependence of the study area and City Centre on the Metro Arterial grid system.

Based on the nature of development interest in the area, these proposals can be prioritized as follows:

- The Executive Court Extension is ranked first since it would provide numerous benefits at a low capital cost. It would provide increased access to Milner Avenue, and relief to Markham Road and the Markham/Milner intersection. In addition, it would have no discernible effects on adjacent residential areas.

- The Progress Court Extension and Partial Interchange would also provide numerous benefits. In terms of the study area it is the single most important link since it would provide additional north-south capacity. It would connect the areas north and south of Highway 401 and since it would provide access to and from Highway 401. It is also very important in the future development of the Malvern Gateway. It has been ranked second, however, due to its high capital cost ($12 million).

- The Milner/McCowan Grade Separation has been ranked second as well. It would provide important relief to McCowan Road and the McCowan/Milner intersection.

  The timing of the Progress Court Extension relative to the Milner/McCowan Grade Separation is dependent on when and where additional development takes place.

- The Bellamy Overpass has been ranked third. Its effects are not as great as the other additions since it would not provide direct access to and/or from Highway 401. It is important since it would provide additional north-south capacity within the study area. It is considered to be a long term consideration since it would only be required should significant additional development occur in the City Centre and Progress Industrial District (i.e. far beyond the "permitted" level of development).

  It should be noted that more flexibility is provided if all four of the roadway improvements are provided. The four roadway projects have similar types of systems benefits in that they either provide additional access from Highway 401 to the study area or provide relief to McCowan Road and Markham Road. They also provide additional access between the areas to the north and south of Highway 401. They do, however, cause significantly different access opportunities to lands throughout the study area. Therefore their implementation is directly influenced by the nature, location and timing of development.

The other three identified roadway additions were:

- Bushby Drive Extension
- Widen Milner Avenue
- Neilson/Milner/Highway 401 ramps

Most importantly, the Bushby Drive Extension provides the opportunity to increase access to the area located between the watercourse (tributary of the East Branch of the Highland Creek) and Ellesmere Road. As well, it would provide relief to Progress Avenue, Ellesmere Road and the Progress Avenue/Markham Road intersection. Considering the level of interest for development/redevelopment in the area, it may be desirable to consider the Bushby Drive Extension in the short term.

The widening of Milner Avenue will be required as development proceeds along Milner Avenue in order to provide a satisfactory level of local access. The protection for six lanes should be considered, although the need for this is a very long term consideration and it is likely that reconstruction would be staged. As well, the widening of Milner Avenue could be considered for other uses, such as high occupancy vehicle lanes or exclusive bus lanes, particularly in conjunction with the Malvern Gateway.

The Neilson/Milner/Highway 401 ramps have been identified to be protected (as circumstances permit) for possible higher density development in the surrounding area. A site plan application for the property bisected by the proposal has been submitted, however, and the applicant does not support the connection. Therefore protection of the ramps is not being pursued at this time.